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PERSIAN GULF PILOT

COMPRISING
THE PERSIAN GULF AND ITS APPROACHES,
FROM RAS AL HADD, IN THE SOUTH-WEST,
TO CAPE MONZE, IN THE EAST

NINTH EDITION

1942

CAUTION WHEN APPROACHING BRITISH PORTS.

Caution.—Mariners should always consult Admiralty Notice to Mariners No. 1 of the current year for the latest information on the subjects mentioned below.

PART I.—CLOSING OF PORTS.

(1) My Lords Commissioners of the Admiralty having taken into consideration the fact that it may be necessary to forbid all entrance to certain ports of the Empire, this is to give Notice that on approaching the shores of the British Isles, or any of the ports or localities of the British Empire, a sharp lookout should be kept for the signals described in the following paragraph, and for the vessels mentioned in paragraph (5), Part II, of this Caution, and the distinguishing and other signals made by them. In the event of such signals being displayed, the port or locality should be approached with great caution, as it may be apprehended that obstructions may exist.

(2) If entrance to a port is prohibited, three *red* lights vertically disposed by night, or three *red* balls vertically disposed by day, will be exhibited in some conspicuous position in or near to its approach, which signals will also be shown by the vessels indicated in paragraph (5), Part II, of this Caution.

If these signals are displayed, vessels must approach the port with the greatest caution, and implicitly obey all orders or signals given them by the Examination vessel or Signal station.

(3) At some ports or localities at home or abroad, searchlights are occasionally exhibited for exercise. Instructions have been given to avoid directing moveable searchlights during practice on to vessels under way, but mariners are warned that great care should be taken to keep a sharp lookout for the signals indicated in paragraph (2) above, when searchlights are observed to be working.

PART II.—EXAMINATION SERVICE.

(4) In certain circumstances, it is also necessary to take special measures to examine vessels desiring to enter the ports or localities at home or abroad.

(5) In such case, vessels carrying the distinguishing flags or lights mentioned in paragraph (7) will be charged with the duty of examining ships which desire to enter the port and of allotting positions in which they shall anchor. If Government vessels, or vessels belonging to the local port authority, are found patrolling in the harbour, merchant vessels are advised to communicate with such vessels with a view to obtaining information as to the course on which they should approach the port. Such communication will not be necessary in cases where the pilot on board has already received this information from the local authorities.

(6) As the institution of the Examination Service will probably be unknown to vessels desiring to enter the port, especial care should be taken in approaching the ports, by day or night, to keep a sharp lookout for any vessel carrying the flags or lights mentioned in paragraph (7), and to be ready to "bring to" at once when hailed by her or warned by the firing of a gun or sound rocket.

In approaching by night any port in the British Empire, serious delay and risk will be avoided if four efficient all round lanterns, two *red* and two *white*, are kept available for use.

(7) By day the distinguishing flag of the Examination Steamer will be a special flag (*white* and *red* horizontal surrounded by a blue border).

Also, three *red* balls vertically disposed if entrance is prohibited.

Usually the Examination Steamers will fly the blue ensign, but in certain circumstances they may fly the white ensign.

By night the steamer will carry: (a) Three *red* lights vertically disposed if entrance is prohibited; (b) three *white* lights vertically disposed if entrance is permitted.

The above lights will be carried in addition to the ordinary navigation lights, and will show an unbroken light around the horizon.

(8) Merchant vessels approaching a British port, at which the Examination Service is in force, must hoist their signal letters on arriving within visual signalling distance of the port and are not to wait for the signal "What is the name of your vessel?" to be made from the Examination Steamer.

(9) Masters are warned that, before attempting to enter any port when the Examination Service is in force, they must in their own interests strictly obey all instructions given to them by the Examination Steamer.

Whilst at anchor in the Examination Anchorage, Masters are warned that it is forbidden, except for the purpose of avoiding accident, to do any of the following things, without permission from the Examination Officer:—(a) To lower any boat; (b) to communicate with the shore or other ships; (c) to move the ship; (d) to work cables; (e) to allow any person or thing to leave the ship.

(10) In case of fog, Masters of vessels are enjoined to use the utmost care, and the port should be approached with caution.

(11) When the Examination Service is in force, merchant vessels when approaching ports are especially cautioned against making any signal, either by day or night, the use of which would be liable to be fired on.

(12) The pilots attached to the ports will be appointed by the Admiralty and will be followed.

NOTATIONS OF SUPPLEMENTS AND ANNUAL
SUMMARIES OF NOTICES TO MARINERS
RELATING TO THIS BOOK.

To be filled in by Navigating Officer.

(In Chart Depots the first two columns are alone to be filled up.)

Title.	Date of Publication and Number.	Whether pasted in or noted in Margins of Book, and Date of each Correction.

CAUTION.

Attention is called to British Admiralty Notices to Mariners Nos. 1, 4 and 7, which are published annually.

NOTICE.

This volume should not be used without reference to the latest Supplement and Annual Summary of Notices to Mariners affecting it which may have been published.

A Supplement to this volume will generally be published annually until the latter is again taken up for revision.

After the publication of Supplement No. 1, each succeeding supplement cancels the former.

Between the time of the volume being taken up for revision and the publication of the new edition no supplement will be issued, but early in each year a Summary of the Admiralty Notices to Mariners affecting the volume, which have been published during the preceding year, will be issued as a separate publication.

The publication of all Supplements and Summaries of Notices to Mariners is announced in Admiralty Notices to Mariners.

The latest Supplement and any Annual Summary of Notices to Mariners that has been published affecting this volume will be obtainable gratuitously by purchasers of this volume from the Agents for the sale of Admiralty charts and other Hydrographic publications, on application either personally or by letter; in the latter case the cost of postage must be enclosed. For a list of these Agents see Admiralty Notice to Mariners No. 2, published annually.

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FROM RAS AL HADD, IN THE SOUTH-WEST,
TO CAPE MONZE, IN THE EAST

NINTH EDITION, 1942

ALL BEARINGS ARE TRUE

Crown Copyright Reserved

LONDON
PUBLISHED for the HYDROGRAPHIC DEPARTMENT, ADMIRALTY

To be obtained from
the Agents for the Sale of Admiralty Charts

1942

Price

Seventeen Shillings and Sixpence Net

VK
798
G7
1942

CAUTION.

IN THIS WORK THE BEARINGS ARE ALL TRUE, AND WHEN GIVEN IN DEGREES ARE RECKONED CLOCKWISE, FROM 000° (NORTH) TO 359° .

THE BEARINGS OF LIGHTS ARE GIVEN FROM SEAWARD.

THE LATITUDES AND LONGITUDES GIVEN IN THE TEXT ARE APPROXIMATE.

THE DISTANCES ARE EXPRESSED IN NAUTICAL MILES OF 60 TO A DEGREE OF LATITUDE.

A CABLE'S LENGTH IS ASSUMED TO BE EQUAL TO THE TENTH PART OF A NAUTICAL MILE.

THE DEPTHS ARE GIVEN BELOW CHART DATUM LEVEL WHERE NOT OTHERWISE STATED.

HEIGHTS ON THE LAND ARE GIVEN ABOVE MEAN LEVEL OF HIGH WATER SPRING TIDES.

FIGURES IN BRACKETS GIVEN AFTER THOSE DENOTING FEET, FATHOMS AND YARDS ARE THEIR EQUIVALENTS IN METRES.

TIME IS EXPRESSED IN THE FOUR-FIGURE NOTATION COMMENCING AT MIDNIGHT.

THE TERM "STEAM VESSEL" USED HEREIN INCLUDES ANY VESSEL PROPELLED BY MACHINERY.

A NAME IN BRACKETS, IMMEDIATELY FOLLOWING ANOTHER NAME, IS THE OBSOLETE NAME WHICH IS STILL SHOWN ON THE ADMIRALTY CHARTS. AS A GENERAL RULE, THE BRACKETTED NAME IS ONLY INSERTED IN THE DESCRIPTION OF THE PLACE OR OBJECT PREVIOUSLY BEARING THAT NAME.

WHEN SHADING IS USED TO INDICATE COLOURS OF FLAGS, TIDAL LIGHT SIGNALS, OR BEACONS, IT IS AS FOLLOWS:



Yellow.



Red.



Blue.



Green.



Black.

ADVERTISEMENT TO THE NINTH EDITION

The Persian Gulf Pilot contains sailing directions for the Persian gulf and the approaches thereto, from Ras al Hadd, in the south-west to Cape Monze, in the east.

This, the ninth edition, has been compiled by Captain F. M. Hodgson, R.N., and contains the latest information received in the Hydrographic Department from British and foreign sources.

The meteorological information has been revised by the Meteorological Office of the Air Ministry. Temperature is expressed in degrees Fahrenheit, rainfall in inches, and speed in knots and distance in nautical miles unless expressly stated otherwise. Information received from meteorological services which do not use these units has been converted into the units mentioned above by the Meteorological Office.

Mariners and others are invited in the interests of navigation to forward to the Hydrographer of the Navy, Admiralty, London, S.W.1, any information that may come under their notice, which would be useful for the correction of the charts and other hydrographic publications issued by the British Admiralty; *early* advice as to newly-discovered dangers, the establishment of, or changes in, any aids to navigation, is specially requested.

Copies of a form (H. 102) on which to render information can be obtained gratis from the Hydrographer of the Navy, Admiralty, London, S.W.1; or any of the agents in Great Britain and abroad, a list of whom is published, annually, in Admiralty Notice to Mariners No. 2.

By the publication of this volume, the eighth edition of the Persian Gulf Pilot, 1932, and its Supplement No. 7, 1941, are cancelled, and all information affecting that work contained in Notices to Mariners up to and including No. 1305 of 1942 has been embodied in this volume; for Temporary and Preliminary Notices to Mariners affecting this edition, the list of Temporary and Preliminary Notices to Mariners in force, published monthly in the weekly edition of the Admiralty Notices to Mariners, should be consulted.

J. A. EDGEELL,
Vice-Admiral,
Hydrographer of the Navy.

*Hydrographic Department,
Admiralty, London,
20th June, 1942.*

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J. A. EDGEELL,
Vice-Admiral,
Hydrographer of the Navy.

*Hydrographic Department,
Admiralty, London,
20th June, 1942.*

BIBLIOGRAPHY

The following publications, other than those of the British Government, have been used in the compilation of this edition :—

BRITISH.

- The Statesman's Year Book, 1941.
- Shipping World Year Book, 1942.
- Second List of Names in Arabia (N.E. and S.E.), Royal Geographical Society, 1937.
- First List of Names in Persia (South), Royal Geographical Society, 1928.
- First List of Names in 'Iraq, Royal Geographical Society, 1932.
- Gazetteer of the Persian gulf, 'Oman and Central Arabia, Vol. II, 1908, by J. G. Lorimer, C.I.E.
- Baluchistan District Gazetteer Series, Vol. VII, 1907.

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GLOSSARY

of words occurring on the charts and in this volume.

The definite article is written either al or el according to pronunciation and is only written with a capital at the beginning of a word. It is assimilated in pronunciation, *i.e.*, before d, dh, n, r, s, sh, t, th, and z.

A—Arabic ; P—Persian.

Āb [P] .	River.	Kubbat [A] .	Deep-water bay or inlet.
Bu [A] .	Father of, <i>i.e.</i> , producing or abounding in; also large.	Kūh [P] .	Hill; mountain.
Aich or Aik [A]	Hard bank.	Kut [A] .	Fort.
'Ali [P] .	Son-in-law and fourth successor of Muhammad; high.	Maidan [A] .	Plain; open space.
Ardh [A]	Ground; land; earth.	Maraqqat [A]	Soft shoal.
Bab [A].	Narrow strait; gate.	Masjid [P]	Mosque.
Bad-gīr [P]	Wind-tower.	Mersa [A]	Anchorage.
Bandar [P]	Sheltered anchorage; harbour; landing-place.	Minār [A]	Tower; minaret.
Birkeh [P]	Water-tank.	Nahr [P]	Canal; creek.
Dasht [P]	Desert	Najwa [A]	Shoal.
Dōha or Dōhat [A]	Bay.	Nakhīl [A]	Palm tree.
Fasht [A]	Rocky reef.	Nashi [A]	North-easterly wind.
Ghar [A]	Cave.	Rak or Rakat [A]	Hard bank or shoal, but no overfalls; not dangerous.
Għubbat [A]	Deep-water bay or inlet.	Ras [A]	Cape; head; projecting point, above or below water.
Hadd [A]	Sand-spit; low, sandy, point; also boundary.	Rūd [P].	River.
Halat [A]	Dry or drying sandbank.	Ruūs [A]	Plural of Ras.
Hassar [A]	Rock.	S a g h i r a o r Segħħir [A]	Small.
Heir [A]	Pearl bank.	Sar [P] .	Peak; summit.
Hisār [A]	Fort.	Sheb [A]	Rocky shoal.
Hor [A]	Shallow fresh or brackish marsh.	Shahr [P]	City.
Jabal [A]	Hill; mountain; also island.	Shaikh .	Chief of tribe, sub-tribe, or village; also religious leader.
Jazīrat [A]	Island; also peninsula.	Shamāl [P]	North-westerly wind.
Kabira [A]	Large.	Sharki [P]	South-easterly wind.
Kad [A].	Shoal.	Shatt [A]	Large fresh-water river.
Kalat [P]	Castle surmounting a hill.	Siah [P]	Black.
Karn [A]	Peaked hill; point.	Sifa [A]	Sandy beach.
Kasr [A]	Palace.	Suhaili [A]	South-westerly wind.
Kassār [A]	Rock above or below water.	Tall [A]	Hillock.
Kaus [A]	South-easterly wind.	Turbat [A]	Tomb.
Kebir [A]	Large.	Umm [A]	Mother of; used similarly to Abu; the u is often omitted and the m prefixed to the place name, <i>e.g.</i> , Magheir—Umm Ghairi.
Khōr [A]	Arm of the sea.	Wādi [A]	River bed; valley.
Khuwair [A]	Diminutive of Khōr.		

INFORMATION RELATING TO ADMIRALTY CHARTS AND PUBLICATIONS, AND GENERAL NAVIGATION.

ON THE CORRECTION OF ADMIRALTY CHARTS.

Guides to Navigation.—In addition to the charts, the navigational publications which are primarily affected by the continual changes and alterations that take place are the Admiralty Sailing Directions, the Admiralty List of Lights, Fog Signals and Visual Time Signals, and the Admiralty List of Radio Signals. The Admiralty Notices to Mariners contain information mainly for the correction of the charts and navigational publications. 5

CHARTS.

1. Degree of Reliance.—While the Admiralty charts can ¹⁰ be relied upon to be correct for all information received, it should be clearly understood that the value of a chart depends on the character of the original survey and on the completeness of the reports of subsequent changes. The remarks on "The Use of Charts as Navigational Aids, &c.", which are subjoined should be carefully ¹⁵ studied in this connection.

2. System of Dating and Issue of Corrected Copies.—Admiralty charts after first publication, are kept corrected by means of new editions, large corrections, and small corrections. Copies of charts issued by the Chief Superintendent of Hydrographic Supplies, ²⁰ Admiralty Chart Agents or Admiralty Chart Depôts are corrected, except from temporary and preliminary Notices to Mariners, for all navigational information to the date of issue.

New charts.—The date of publication of a chart is shown outside the bottom margin, in the middle, e.g. :— 25

Published at the Admiralty 30th May, 1938.

New Editions.—When a chart is revised throughout and modernised in style a new edition is published, the date being shown outside the bottom margin and to the right of the date of publication, e.g. :—

New Edition 2nd Jany., 1938. 30

All large and small corrections notations are at the same time erased, and all old copies of the charts are cancelled.

Large Corrections.—When a chart is corrected from important information which is too comprehensive to promulgate by Admiralty Notice to Mariners or to insert conveniently by hand on existing ³⁵ copies, but when the chart is not revised throughout, the date on which these corrections are made is shown on the chart outside the bottom margin and to the right of the date of publication, and in the case of a chart already marked with a new edition date, below such date, e.g. :— 40

Large corrections 10th Feb., 1938.

All small corrections notations are at the same time erased, and all copies of the chart are cancelled.

Small Corrections.—

5 (i) When a chart is corrected from the information promulgated in an Admiralty Notice to Mariners (except temporary and preliminary Notices), the year, if not already shown, and number of the notice are entered in the bottom left-hand corner of the chart, e.g.:—

Small corrections 1938-903.

10 Copies of the chart stocked by the Chief Superintendent of Hydrographic Supplies, Admiralty Chart Agents and the Admiralty Chart Depôts are corrected by hand from such information.

15 (ii) When a chart is corrected from information which is considered of no importance from the standpoint of safe navigation, and which is, therefore, not promulgated in an Admiralty Notice to Mariners, the year, if not already shown, and date of the correction are entered on the chart, in one of two ways, in the bottom left-hand corner below the margin and in sequence with the notations referred to in the preceding paragraph, e.g.:—

Small corrections, 1938—[5.20]

or Small corrections 1938—(VI.25)

25 These indicate that the chart received minor corrections on the 20th May or 25th June, respectively.
In such cases copies of the chart held by ships and establishments are not usually replaced by new copies, but in exceptional cases, e.g., when new compasses are inserted, new copies of the charts may be supplied. It should, however, be particularly noted that the absence of corrections represented by square or bracket dates from a chart does not invalidate it for navigation.

3. Correction of Charts in Ships.—All small but important corrections affecting navigation that can be made to the charts by hand are promulgated in Admiralty Notices to Mariners and, with the exception of corrections from temporary or preliminary Notices, should at once be neatly made in waterproof red ink on the charts affected, the year (if not already shown) and numbers of the notices being inserted, also in waterproof red ink, in the bottom left-hand corner of the chart. The recognised abbreviations shown on Admiralty chart No. 5011 ("Signs and abbreviations used on Admiralty Charts") should be used.

Generally speaking, the amount of information which should be inserted on a chart should be in accordance with that already shown.

45 On large scale charts, the abridged descriptions, as shown on chart No. 5011, of all details of all lights, light-buoys and fog signals, and the year dates of obstructions, reported shoals, dredged channels, depth on bars or in shifting channels, and irregularities of lights, should be inserted.

50 On coastal charts, the abridged descriptions of only the principal lights and fog-signals, i.e., those to assist in approaching or making the land, should be inserted.

Particulars of such lights should be omitted, in the following order, as the scale of the chart decreases, viz. :—

- (i) Elevation, (ii) Period, (iii), Number in Group, and (iv) Visibility.

Particulars of fog signals should be inserted in their appropriate positions if space permits, but should otherwise be entered in a tabulated list under the title or some other convenient place on the chart. 5

Inner harbour light-buoys and beacons should not be inserted on coastal charts, and against other light-buoys only the character of the light should be inserted. 10

On ocean charts, lights which are visible 15 miles or over should alone be inserted and then only their character and colour.

On all charts, writing should be inserted as much as possible clear of the water, unless the relative objects are on the water and care should be taken not to obliterate any information already on the 15 chart. When cautionary or tidal notes, &c., are inserted, they should be written in a convenient but *conspicuous* place, preferably near the title, where they will not interfere with other details.

Erasures should never be made but the details should, when necessary, be crossed through in waterproof red ink. 20

Admiralty Notices to Mariners are occasionally accompanied by reproductions of portions of charts (known as "blocks"), and when correcting charts from such blocks the following points should be borne in mind :—

- (i) A block may not only indicate the insertion of new information, *but also the omission of matter previously shown*. The latter would, however, invariably be mentioned in the text of the Notice, and the fact that a block accompanies a Notice should not cause the text of the Notice to be disregarded. 30
- (ii) The limiting lines of a block are determined for convenience of reproduction and need not be adhered to when cutting out for pasting on the chart, provided that the point mentioned in the preceding paragraph is taken into consideration. 35
- (iii) The new information shown on a block can sometimes be inserted on the chart by hand, the reason for issuing a block in such a case being to avoid a long description of the new information in the text of the Notice.
- (iv) Owing to distortion the blocks do not always fit the charts exactly, care should therefore be taken when pasting a block on to a chart that the more important navigational corrections fit as closely as possible. This can best be assured by fitting the block while it is dry and making two or three pencil ticks round the edges for use as fitting 40 marks after the paste is applied. 45

Corrections from Temporary or Preliminary Notices to Mariners should be inserted on the charts *in pencil* and the year and number of the notice should be shown against them, e.g.:—N.M. 1938 temp. and also in the bottom left-hand corner of the chart, in pencil, *below* the 50 small corrections notations (*see* above). Temporary corrections should be rubbed out when the notice is received cancelling them, but preliminary corrections should be inked in when the notice is received reporting that the changes have been made.

Charts stocked by the Chief Superintendent of Hydrographic Supplies, Admiralty Chart Agents and the Admiralty Chart Depôts are *not* corrected from Temporary or Preliminary Notices to Mariners, and when charts are received from one of these sources they should be 5 corrected in pencil as necessary from the copies of such Notices already held, or from those supplied with the charts.

Corrections from Wireless Navigational Warnings concerning derelicts and drifting obstructions, the temporary extinction of lights, displacement of important aids to navigation, ice reports &c., should 10 also be noted *in pencil*, as received, on the charts affected. Wireless Navigational Warnings of a permanent nature and those relating to derelicts and drifting obstructions dangerous to navigation are re-issued in the form of Admiralty Notices to Mariners, but other warnings are not re-issued in this way, except in special circumstances.

15 Corrections from information received from authorities other than the Admiralty should be noted, *in pencil*, on the charts affected, but no charted danger is to be expunged without the authority of the Hydrographer of the Navy.

NAVIGATIONAL PUBLICATIONS.

20 Admiralty Sailing Directions, Supplements, &c.

1. The Admiralty Sailing Directions, consisting of about 70 volumes for the whole world, contain general information useful to the navigator.

An index chart bound near the beginning of each volume shows the area dealt with and the serial numbers and limits of all Admiralty 25 charts for the area which were published *when the volume was printed*.

Each volume is periodically revised throughout, and, in the intervals between the publication of new editions, Admiralty Notices to Mariners and Supplements are published to enable the volume to be corrected. It should, however, be clearly understood that Sailing Directions cannot 30 be correct in all minor details after the date of the latest Supplement.

The above-mentioned corrections are not made in the Sailing Directions stocked by the Chief Superintendent of Hydrographic Supplies, Admiralty Chart Agents or the Admiralty Chart Depôts.

A new edition of each volume of Sailing Directions is published at 35 intervals of approximately from ten to twelve years. The number of the latest Admiralty Notice to Mariners used in its compilation is given in the "Advertisement" on page iii of each volume, and the numbers of the Notices affecting it between the dates of going to press and issue to ships and establishments are given in the Notice 40 announcing its publication, to enable the new edition to be corrected before being brought into use.

A Supplement to each volume is generally published annually, each succeeding Supplement cancelling the former. When a volume is taken up for revision, however, no further Supplement to that edition 45 is issued, but subsequent Notices to Mariners affecting it are summarised each year and issued as a separate publication, until the new edition of the volume is published.

A tabular form for notation of the existence of Supplements and Summaries of Notices is printed on the front fly-leaf of all Sailing 50 Directions, and these notations are made as necessary in all copies issued by the Chief Superintendent of Hydrographic Supplies and the Admiralty Chart Depôts.

Supplements and Summaries of Admiralty Notices to Mariners

should be retained intact. *Whenever reference is made to the Sailing Directions, the Supplement must be consulted.* The existence of a Supplement or Summary of Admiralty Notices to Mariners is to be entered in the tabular form inside the cover of the Sailing Directions.

Admiralty Notices to Mariners affecting Sailing Directions are not to be cut up and pasted in, but the book is to be annotated in the margin, or corrected in manuscript, as convenient. 5

2. The Admiralty List of Lights, Fog Signals and Visual Time Signals.—The Admiralty List of Lights, Fog Signals and Visual Time Signals for the world is issued in twelve parts divided 10 geographically as shown on the index chart at the beginning of each part.

Light-buoys are *not* included in the list.

The parts are published at intervals of three years, corrected to the 31st December, and in the intervals, Supplements to each 15 part, embodying all corrections to the 31st December, are published annually, the second Supplement in each case cancelling the first. Important amendments to the Admiralty List of Lights are notified in Admiralty Notices to Mariners, and minor amendments in Section III of the complete weekly editions of these Notices. (Section III also 20 includes the important amendments.)

The List should be corrected for amendments published in Section III of the complete weekly edition of the Admiralty Notices to Mariners, in red ink.

Temporary and Preliminary Notices should be noted *in pencil.* 25

These corrections are not made, however, in copies of the List of Lights, &c., stocked by the Chief Superintendent of Hydrographic Supplies, Admiralty Chart Agents or the Admiralty Chart Depots, and copies received from these sources shall accordingly be corrected from the Supplements (if any) and weekly editions of the Notices before being 30 brought into use.

3. The Admiralty List of Radio Signals.—The Admiralty List of Radio Signals is issued in three volumes.

Volume I.—Communications—Comprises particulars of radiotelegraph coast stations, together with general regulations; it also includes 35 such subsidiary services as medical advice supplied by radio, together with details of the organisation for transmitting British official messages to merchant ships.

Volume II.—Navigational Aids—Comprises particulars of services from direction-finding stations and radiobeacons, together with 40 radio time signals and navigational warnings (with ice signals); all relevant codes and regulations will be found in this volume.

Volume III.—Meteorological Services—Comprises particulars of weather services provided for the use of shipping (including numerous aviation services of interest to mariners), together with relevant 45 codes and lists of meteorological observation stations and aviation routes.

New editions of each volume will be published annually.

A Supplement of each volume is also issued. The Supplement to Volume I contains corrections between the date of the volume 50 going to press and the 31st of December. The Supplements to Volumes II and III embody all corrections issued between the date of going to press and the date of their issue to Ships and Establishments.

Importation amendments to the List are notified in the Admiralty Notices to Mariners, and minor amendments in Section IV of the 55

complete weekly edition of these Notices. Section IV. also includes the important amendments.

Copies of the List stocked by the Chief Superintendent of Hydrographic Supplies, Admiralty Chart Agents or the Admiralty Chart Depôts are not kept corrected, and Lists received from these sources should accordingly be corrected from the Supplements and from the weekly editions of the Admiralty Notices to Mariners before being brought into use.

4. The Admiralty Tide Tables.—The Admiralty Tide Tables are published in three parts, as follows :

Part I, containing tidal predictions for Standard ports. This Part is published annually in two separate Sections, A, Home Waters, and B, Foreign Waters.

Part II, containing data for predicting tides at places which are not Standard ports, and for predicting tidal streams at places where the stream is not semi-diurnal. This Part is published at intervals of about five years with Supplements as required.

Part III, containing instructions for predicting tides and tidal streams, and for analysing observations of tides and tidal streams, with tables to assist prediction and analysis.

THE USE OF CHARTS AS NAVIGATIONAL AIDS AND GENERAL REMARKS RELATING TO PRACTICAL NAVIGATION.

Reliance on a chart.—The value of a chart must manifestly depend upon the accuracy of the survey on which it is based, and this becomes more important the larger the scale of the chart.

To estimate this the date of the survey, which is always given in the title, is a good guide. Besides the changes that, in waters where sand or mud prevails, may have taken place since the date of the survey, the earlier surveys were mostly made under circumstances that precluded great accuracy of detail, and, until a plan founded on such a survey is tested, it should be regarded with caution. It may, indeed, be said that, except in well-frequêted harbours and their approaches, no surveys yet made have been so minute in their examination of the bottom as to make it certain that all dangers have been found. The fullness or scantiness of the soundings is another method of estimating the completeness of a chart. When the soundings are sparse or unevenly distributed, it may be taken for granted that the survey was not in great detail.

It appears to be insufficiently realised that the degree of reliance which may reasonably be placed upon an Admiralty chart, even in surveys of modern date, is mainly dependent on the scale on which the survey was made. The scale for publication is now generally that of the original survey, except in the case of coast sheets which are sometimes reduced. It should not, therefore be assumed that the original survey was made on a larger scale than that published.

It must be borne in mind that the principal method of ascertaining the inequality of the bottom of the sea is by the laborious process of sounding, and that in sounding over any area, the boat or vessel obtaining the soundings is kept on given lines ; that each time the lead descends, or a sonic sounding is taken, the depth over only a small area is obtained, in the case of the lead, it has a diameter of only a few inches, and that consequently each line of soundings, though miles in length, is only to be considered as representing a narrow width.

Surveys are not made on uniform scales, but each survey is made on a scale commensurate with its apparent importance. For instance, a general survey of a coast, which vessels only pass in proceeding from one place to another is not usually made on a scale larger than one inch to the nautical mile, while surveys of areas where vessels are likely to anchor, are made on a scale of three inches to the mile, and surveys of frequented ports or harbours likely to be used by fleets, on a scale of from six inches to ten inches to the nautical mile.

Close examination by sound is the only method by which surveys on a large scale can be made, and in view of the vast mileage of surveys yet requiring completion in the interests of navigation, it would be a waste of time to undertake large scale coast surveys.

The scale on which a survey is to be conducted having been settled, it is manifestly superfluous to obtain more lines of soundings than can be represented on the paper. 100 soundings, which is the maximum number that can be placed with clearness on every square inch of paper, means that on a scale of one inch to the mile each sounding on the chart occupies an area representing eight acres of actual ground, whilst on a scale of six inches to the mile each sounding represents an area of a little less than a quarter of an acre, i.e., of 100 feet square.

The following diagram represents as many soundings as can be placed legibly on a square inch of paper :—

16	15	18	13	13	14	12	11	10	9
14	15	14	14	13	13	12	11	9	8
15	13	14	17	16	14	13	10	10	9
16	16	17	18	16	12	11	6	9	10
18	17	15	12	9	7	7	7	6	10
19	16	12	9	5	4	3	3	6	9
22	19	10	10	9	5	6	7	8	10
20	16	12	7	5	6	6	7	6	10
18	15	11	9	7	7	7	6	10	11
20	17	14	11	12	10	9	10	11	13

Little assistance in detecting excrescences on the bottom is afforded by the eye, when sounding in a boat, even in clear weather, on account of the observer being within five feet of the surface; none in turbid seas. If, therefore, there is no inequality in the soundings to cause suspicion, a shoal patch between two lines may occasionally escape detection.

Lines of soundings plotted as close as may be practicable on a scale of 6 inches to the mile would be 100 feet apart, and each line would be only 2 inches in actual width.

Thus, in a chart on a scale of one inch to the mile, an inequality of some acres in extent rising close to the surface, if it happened to be situated between two lines, might escape detection; whilst in a chart on a scale of 6 inches, inequalities as large as battleships, if lying parallel with, and between the lines of soundings, might exist without detection if they rose abruptly from an otherwise even bottom.

General coast charts should not, therefore, be looked upon as infallible, and a rocky shore should on no account be approached within the ten-fathom contour line, without taking every precaution to avoid a possible danger; and even with surveys of harbours on a scale of 6 inches to the mile vessels should avoid, if possible, passing over charted inequalities in the ground, as some isolated rocks are so sharp that the lead may not find the highest part.

Better results can, however, be obtained by sonic sounding owing to the rapidity with which such soundings can be taken, but even this method will not find rocks unless the boat or vessel be directly over them.

5 Blank spaces among soundings mean that no soundings have been obtained in these spots. When the surrounding soundings are deep it may with fairness be assumed that in the blanks the water is also deep; but when they are shallow, or it can be seen from the rest of the chart that reefs or banks are present, such blanks should be

10 regarded with suspicion.

Soundings in hair line, which are shown on the latest charts in upright figures, and on other charts in sloping figures, indicate that such soundings have been taken from smaller scale charts, an unreliable source, or adapted from old and imperfect surveys.

15 *Fathom lines, a caution.*—Except in plans of harbours that have been surveyed in detail, the six-fathom line on most Admiralty charts is to be considered as a caution or danger line against unnecessarily approaching the shore or bank within that line, on account of the possibility of the existence of undiscovered inequalities of the bottom,

20 which nothing but an elaborate detailed survey could reveal. In general surveys of coasts or of little frequented anchorages, the necessities of navigation do not demand the great expenditure of time required for such a detailed survey. It is not contemplated that ships will approach the shore in such localities without taking special

25 precautions.

The ten-fathom line, is on rocky shores, as before mentioned, another warning, especially for ships of deep draught.

Charts on which no fathom lines are marked must be especially regarded with caution, as it generally means that soundings were

30 too scanty and the bottom too uneven to enable them to be drawn with accuracy.

Isolated soundings, shoaler than surrounding depths, should always be avoided as there is no knowing how closely the spot may have been examined.

35 *Chart on largest scale always to be used.*—It sometimes happens that from press of work, only the copper plate of the larger scale chart of a particular locality can at once receive any extensive re-arrangement of coastline or sounding. This is an additional reason, besides the obvious one of the greater detail shown, why this largest scale chart

40 should always be used for navigating.

Caution in using small scale charts.—In approaching the land or dangerous banks, regard must always be had to the scale of the chart used. A small error in laying down a position means only yards on a large-scale chart, whereas on a small scale the same amount of displacement means large fractions of a mile.

45 For the same reason bearings to near objects should be used in preference to objects farther off, although the latter may be more prominent, as a small error in bearing or in laying it down on the chart has a greater effect in misplacing the position the longer the line to be drawn.

Graduation.—All plans are now being graduated in skeleton style before publication in order to facilitate easy reference to astronomical positions; previously published plans are also graduated as opportunity offers. The graduation is, however, of necessity

50 often based upon imperfect information of a conflicting nature; for this reason, whenever an astronomical position is quoted other

than approximate (i.e., when seconds are given), it is necessary to quote also the number of the particular chart from which the position has been derived.

In this connection it is pointed out that, whenever possible, a position should be transferred from one chart to another by bearing and distance from a distinguishing feature common to both, such as a point of land or a light, &c., and not by the graduation which may differ owing to one of the charts being constructed on later and more complete astronomical data than the other.

Distortion of printed charts.—The paper on which charts are printed is, from various causes, subject to distortion, but the effect of this is seldom sufficient to affect navigation. It must not, however, be expected that accurate series of angles taken to different points will always exactly agree when carefully plotted upon the chart, especially if the lines are to objects at some distance. The larger the chart the greater the amount of this distortion.

Buoys.—It is manifestly impossible that any reliance can be placed on buoys always maintaining their exact position. Buoys should, therefore, be regarded as warnings and not as infallible navigating marks, especially when in exposed positions; and a ship should always, when possible, be navigated by bearings of fixed objects on shore or angles between them, and not by buoys.

Light-buoys.—The lights shown by light-buoys cannot be implicitly relied on, as, if occulting or flashing, the apparatus may get out of order, or the light may be altogether extinguished. These lights in the British isles are from 5 to 217 candle power.

Cable-buoys.—Cable-buoys marking the ends of submarine cables usually are spherical or can shaped, surmounted by a globe and occasionally a flag. Below the topmark two *white fixed* lights, disposed horizontally, may be exhibited, but they cannot be implicitly relied on.

Lights.—Circles drawn on charts round a light are not intended to give information as to the distance at which it can be seen, but solely to indicate, in the case of lights which do not show the same characteristics or colours in all directions, the bearings between which the differences occur.

All the distances given in the Admiralty List of Lights and on the charts for the visibility of lights are calculated for a height of an observer's eye of 15 feet. The table of distances visible due to height, at the beginning of each part of the Admiralty List of Lights, affords a means of ascertaining how much more or less the light is visible should the height of the eye be more or less. The glare of a powerful light is often seen far beyond the limit of visibility of the actual rays of the light, but this must not be confounded with the true range. Again, refraction may often cause a light to be seen farther than under ordinary circumstances.

When looking out for a light at night, the fact is often forgotten that from aloft the range of vision is much increased. By noting a star immediately over the light a very correct bearing may be afterwards obtained from the standard compass.

The intrinsic power of a light should always be considered when expecting to make it in thick weather. A weak light is easily obscured by haze, and no dependence can be placed on its being seen.

The power of a light can be estimated by remarking its candle power, as given in the Admiralty List of Lights, and in some cases by noting how much its visibility in clear weather falls short of the range

due to the height at which it is placed. Thus, a light standing 200 feet above the sea, and only recorded as visible at 10 miles in clear weather, is manifestly of little brilliancy, as its height would permit it to be seen over 20 miles, if of any power. (See table in the 5 Admiralty List of Lights.)

The distance from a light cannot be estimated either by its brilliancy or its dimness.

On first making a light from the bridge, by at once lowering the eye several feet and noting whether the light is made to dip it may be determined 10 whether the vessel is in the circle of visibility corresponding with the usual height of the eye or unexpectedly nearer the light.

Fog signals.—Sound is conveyed in a very capricious way through the atmosphere. The following points in regard to fog signals should be borne in mind :—

- 15 (a) Fog signals are heard at greatly varying distances.
- (b) Under certain conditions of atmosphere, when an air fog signal is a combination of high and low tones one of the notes may be inaudible.
- 20 (c) There are occasionally areas around a fog signal in which it is wholly inaudible.
- (d) A fog may exist a short distance from a station and not be observable from it, so that the signal may not be sounded.
- (e) Some fog signals cannot be started at a moment's notice after signs of fog have been observed.
- 25 Mariners are therefore warned that fog signals cannot be implicitly relied upon, and that *the practice of sounding should never be neglected*. Particular attention should be given to placing "Look-out men" in positions in which the noises in the ship are least likely to interfere with the hearing of the sound of an air fog signal; as experience shows
- 30 that, though such a signal may not be heard from the deck or bridge when the engines are moving, it may be heard when the ship is stopped, or from a quiet position. It may sometimes be heard from aloft though not on deck.

Great assistance may be obtained from the wireless fog signals transmitted 35 from many important lighthouses and light-vessels, but the attention of Mariners is called to the serious dangers which may arise from their misuse. No attempt should be made to approach such a signal on a wireless bearing, whilst relying only on hearing the sound fog signal in sufficient time to alter course to avoid danger. When the 40 wireless fog signal is transmitted from a light-vessel, it is essential in order to avoid collision, that the bearing from these signals should not be kept constant.

Tides.—In navigating coastal waters where the range of the tide is considerable, caution is always necessary. The tidal predictions for 45 Standard ports in Part I of the Admiralty Tide Tables can generally be relied upon to give the times of high and low water to within a few minutes, and heights within a few tenths of a foot. Larger errors are to be expected in the predictions for places which are not Standard ports, computed from the data in Part II, but such predictions computed 50 from the harmonic constants are always sufficiently accurate for the general requirements of navigation. The heights of the tide at times between high and low water may usually be found within narrow limits in accordance with the instructions in Parts I and III of the Tide Tables.

55 The datums of Admiralty charts depending on Admiralty surveys vary with the type of tide, but usually conform with the International

agreement, that datum should be "a plane so low that the tide will but seldom fall below it." The datums used by different nations, however, differ very considerably and those of Admiralty charts depending on foreign surveys are always those used by the original surveyors, which vary from "lowest possible low water" to "mean low water" in tidal waters, and are usually mean sea level in non-tidal waters.⁵

The datum used is always stated on large scale Admiralty charts, and full particulars of these datums will be found in Part III of the Tide Tables.¹⁰

Caution.—Most datums are above the lowest level to which the tide may fall; the charts therefore do not always show minimum depths.

Tidal streams.—Where the tidal streams are semi-diurnal information regarding them is usually given, in a convenient part of the chart, in tabular form or by notes, special symbols being inserted at ¹⁵ the positions to which the information refers. In certain cases, where the information available is incomplete, the streams are indicated by means of arrows.

Where the streams are not semi-diurnal, information cannot be given on the charts, but the harmonic constants of the stream, if ²⁰ known, will be found in Part II of the Tide Tables.

Tidal streams, particularly if rotary, may vary considerably both in direction and rate; predictions of the stream must therefore always be considered approximate.

The turn of the tidal stream is not usually coincident with the times ²⁵ of high and low water; in fact, though in estuaries, harbour entrances, &c., the stream usually turns at about the times of high and low water, in open channels, and along open coasts generally, the turn usually occurs more nearly at half tide. Predictions of the times of high and low water must therefore never be used as predictions ³⁰ of the times of slack water.

It should be remembered that, even where the general direction of the stream is parallel with the shore, an indraught is usually experienced when crossing the entrances to bays and inlets.

Fixing positions.—For further information on this subject, see ³⁵ Admiralty Manual of Navigation.

When in sight of land, every opportunity should be taken of fixing the ship's position by terrestrial objects.

The most usual method is by compass bearings of suitable objects, and it must be borne in mind that a fix by only two bearings is liable ⁴⁰ to error, either an absolute error in taking the bearings, or those made in applying the deviation or in laying the bearings off on the chart. For these reasons, a third or check bearing of some other object should, when possible, be taken, especially when near the shore or dangers. The coincidence of the resulting three lines will prevent any mistakes ⁴⁵ if the objects are suitably placed.

The most accurate method of fixing a position is by angles between well-defined objects on the chart. All ships are supplied with a station pointer, and this method should be used whenever possible.

Two conditions are, however, necessary for its successful employment; first that the objects be well chosen, and, second, that the observer is skilful, and rapid in his use of the sextant and station pointer. For the former, reference can be made to the pamphlet on the use of the station pointer; the latter is only to be obtained by practice.

It will readily be seen that the sextant offers great advantages, as ⁵⁵ angles can be obtained from any position whence the objects are visible.

Better results can, however, be obtained by sonic sounding owing to the rapidity with which such soundings can be taken, but even this method will not find rocks unless the boat or vessel be directly over them.

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- 40 Standard ports in Part I of the Admiralty Tide Tables can generally be relied upon to give the times of high and low water to within a few minutes, and heights within a few tenths of a foot. Larger errors are to be expected in the predictions for places which are not Standard ports, computed from the data in Part II, but such predictions computed from the harmonic constants are always sufficiently accurate for the general requirements of navigation. The heights of the tide at times between high and low water may usually be found within narrow limits in accordance with the instructions in Parts I and III of the Tide Tables.
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Tidal streams, particularly if rotary, may vary considerably both in direction and rate; predictions of the stream must therefore always be considered approximate.

The turn of the tidal stream is not usually coincident with the times 25 of high and low water; in fact, though in estuaries, harbour entrances, &c., the stream usually turns at about the times of high and low water, in open channels, and along open coasts generally, the turn usually occurs more nearly at half tide. Predictions of the times of high and low water must therefore never be used as predictions 30 of the times of slack water.

It should be remembered that, even where the general direction of the stream is parallel with the shore, an indraught is usually experienced when crossing the entrances to bays and inlets.

Fixing positions.—For further information on this subject, see 35 Admiralty Manual of Navigation.

When in sight of land, every opportunity should be taken of fixing the ship's position by terrestrial objects.

The most usual method is by compass bearings of suitable objects, and it must be borne in mind that a fix by only two bearings is liable 40 to error, either an absolute error in taking the bearings, or those made in applying the deviation or in laying the bearings off on the chart. For these reasons, a third or check bearing of some other object should, when possible, be taken, especially when near the shore or dangers. The coincidence of the resulting three lines will prevent any mistakes 45 if the objects are suitably placed.

The most accurate method of fixing a position is by angles between well-defined objects on the chart. All ships are supplied with a station pointer, and this method should be used whenever possible.

Two conditions are, however, necessary for its successful employment; first that the objects be well chosen, and, second, that the observer is skilful, and rapid in his use of the sextant and station pointer. For the former, reference can be made to the pamphlet on the use of the station pointer; the latter is only to be obtained by practice.

It will readily be seen that the sextant offers great advantages, as 55 angles can be obtained from any position whence the objects are visible.

In many narrow waters also, where the objects may yet be at some distance, as in coral harbours, or narrow passages among mud banks, navigation by sextant and station-pointer is invaluable, as a true position can only be obtained by its means. A small error in either taking or plotting a bearing under such circumstances may put the ship ashore.

In all cases where great accuracy of position is desired, such as the fixing of a rock or shoal, or the addition to a chart of fresh soundings or new buildings, angles should invariably be used. These should be taken to several objects, the more the better, but five objects is a good number, as the four angles thus obtained not only prevent any errors, but also furnish a means of checking the accuracy of the chart itself. When running a line of soundings, it is only necessary to take a third angle now and then; firstly to make certain that the more important soundings, as at the end of a line, are correctly placed, and, secondly, to check the general accuracy of the chart.

Attention is also directed to the very useful and handy method of fixing by the bearing and distance of a suitable object.

Should the ship be supplied with a rangefinder, its use here is obvious, but without one a very good approximate distance of an object of known height may be obtained, by observing its angle of elevation and obtaining the distance from Lecky's Offshore Distance Tables, which are supplied with all sets of charts.

Full directions for the use of these Tables are given with them.

Sometimes, when only one of the requisite objects is visible from the standard compass, a compass bearing of it and a sextant angle to the other may be used to fix the position.

The method of fixing by doubling the angle on the bow is useful when passing points of land, &c., in waters where there is either no tidal stream or current, or where this can be estimated with sufficient accuracy. This method is as follows:—

Suppose that the angle between the ship's head and an object is measured, and found to be X° , and that the time of the observation is noted. Suppose also that the time is again taken when the angle between the ship's head and the object is $2X^\circ$. Then, if the course made good is the course steered, the distance of the ship from the object, at the time that the second bearing was taken, is equal to the run (over the ground) in the interval. Hence the ship's position can at once be laid off as a bearing and distance from the object. In practice, the angle X° should not be less than about 25° .

The most useful form of this method, the so-called "four point bearing," gives an excellent fix for a departure but does not ensure safety, as the point with its outlying dangers is abeam before the position is obtained.

The above fix is only reliable if either there is no tidal stream or current, or if the stream is running directly with or against the course of the ship; if otherwise, or if leeway is to be allowed for, the above method should never be used, but the ship's position should be obtained by plotting the two bearings and the estimated course and distance made good in the interval.

A table "Distance of an object by two bearings," is supplied with certain chart folios, and is also given in Inman's Tables, by which the ship's position at the time of the second bearing can be found; any two bearings at a suitable angle to each other may be used, together with the run between them, but, again, this table should not be used when the vessel is subject to a cross tidal stream or leeway.

The use of the danger angle in passing outlying dangers with land behind them, should also not be forgotten. A vertical danger angle is useful when the danger lies off an object such as a lighthouse, the height of which is known ; the angle being obtained from the afore-said Lecky's Tables. If a horizontal danger angle between two objects is used, however, caution is necessary, as, should the objects not be correctly placed on the chart, the angle taken from these Tables may not serve the purpose. This method should not, therefore, be employed when the survey is old or manifestly imperfect.

When fixing by astronomical observations, attention is drawn to 10 the great utility of the position line. Even a single position line may at times give invaluable information, as the ship must be somewhere on this line, provided that the chronometer is correct.

A sounding obtained at the same time may often serve to give an approximate position. Again, by steering along, or at a required 15 distance parallel to, a single position line, a vessel may make her port or avoid a danger, although uncertain of her position.

A very accurate position may be obtained by observations of two or more stars at evening or morning twilight, or by the observation of a bright star at daylight, and another, shortly afterwards, of the 20 sun when a few degrees above the horizon. The position lines obtained from the bodies observed should differ in azimuth by 30° or more.

Mariners are also reminded that, with modern tables for correcting the altitude, observations of the moon entail practically no more calculation than those of a planet. Moon sights are sometimes 25 available when stars are obscured by light cloud, &c. ; also an excellent position may frequently be obtained by simultaneous observations of the sun and moon.

Great use may be made of wireless bearings for fixing the ship, full details of this method, and its limitations, are given in the 30 Admiralty List of Radio Signals.

Observations for Errors of the Compass.—No opportunity should be neglected of checking the deviations of the standard compass. When coasting, and a well surveyed and fairly large scale chart is available, an excellent method of observing the deviation is by taking 35 the compass bearing of two suitable objects when in transit, and comparing this with the magnetic bearing from the chart ; provided always that the objects are not too close together. When this method is not available, the deviation should be obtained by azimuths of a heavenly body.

Deviations should be observed on any change of course on which the ship is steered for any material space of time ; if steering a steady course, the compass error should be observed at least twice a day.

Change of variation of the compass.—The gradual change in the variation must not be forgotten in laying down positions by bearing 45 on charts. The magnetic compasses placed on the charts for the purpose of facilitating plotting become in time slightly in error, and in some cases, such as with small scales, or when the lines are long the displacement of position from neglect of this change may be of importance. The compasses are re-engraved when the error 50 amounts to a degree, but the chart plates cannot be corrected more frequently from the impossibility of making alterations often on one spot in a copper plate.

The geographical change in the variation is in some parts of the world sufficiently rapid to need consideration. For instance, in 55 approaching Halifax from Newfoundland the variation changes 10°

in less than 500 miles, and in the English channel about 5° in 400 miles. The Variation chart should be consulted on this head.

On certain general charts embracing large areas with considerable change of variation, true compasses are placed instead of magnetic compasses, the variation being shown by *isogonic lines* (curves of equal magnetic variation), in a similar manner to the Variation chart. One or two *isogonic lines* are also sometimes placed on charts, in addition to the magnetic compasses, in order to indicate the general direction of these curves, and thus facilitate the determination of the variation to be employed in portions of the chart not in immediate proximity to any one of the engraved compasses.

Local magnetic disturbance of the compass on board ship.—The term "local magnetic disturbance" has reference only to the effects on the compass of magnetic masses external to the ship in which it is placed. Observation shows that such disturbance of the compass in a ship afloat is experienced only in a few places on the globe. Magnetic laws do not permit of the supposition that it is the visible land which causes such disturbance, because the effect of a magnetic force diminishes in such rapid proportion as the distance from it increases that it would require a local centre of magnetic force of an amount absolutely unknown to affect a compass half a mile distant.

Such deflections of the compass are due to magnetic minerals in the bed of the sea under the ship, and when the water is shallow, and the force strong, the compass may be temporarily deflected when passing over such a spot, but the area of disturbance will be small, unless there are many centres near together.

They may also be due to wrecks lying on the bottom in moderate depths, but investigations have proved that, while deflections of unpredictable amount may be expected when very close to such wrecks, it is unlikely that deflections in excess of 7° will be experienced, nor should the disturbance be felt beyond a distance of 250 yards.

It is very desirable that whenever a ship passes over an area of local magnetic disturbance, the position should be fixed, and the facts reported as far as they can be ascertained.

Use of oil for modifying the effect of breaking waves.—Many experiences of late years have shown that the utility of oil for this purpose is undoubtedly, and the application simple.

The following may serve for the guidance of seamen, whose attention is called to the fact that a very small quantity of oil, skillfully applied, may prevent much damage both to ships (especially the smaller classes) and to boats, by modifying the action of breaking seas.

The principal facts as to the use of oil are as follows:—

1. On free waves, i.e., waves in deep water, the effect is greatest.
2. In a surf, or waves breaking on a bar, where a mass of liquid is in actual motion in shallow water, the effect of the oil is uncertain, as nothing can prevent the larger waves from breaking under such circumstances; but even here it is of some service.
3. The heaviest and thickest oils are most effectual. Refined kerosene is of little use; crude petroleum is serviceable when nothing else is obtainable; but all animal and vegetable oils, such as waste oil from the engines, have great effect.
4. A small quantity of oil suffices, if applied in such a manner as to spread to windward.
5. It is useful in a ship or boat, both when running, or lying to, or in wearing.
6. No experiences are related of its use when hoisting a boat up

in a sea-way at sea, but it is highly probable that much time and injury to the boat would be saved by its application on such occasions.

At anchor, when the sea is sufficient to render it difficult to hoist up or in boats, oil bags from forward or from the swinging booms have been found to render the sea alongside comparatively smooth. 5

7. In cold water, the oil, being thickened by the lower temperature, and not being able to spread freely, will have its effect much reduced. This will vary with the description of oil used.

8. The best method of application in a ship at sea appears to be : hanging over the side, in such a manner as to be in the water, small 10 canvas bags, capable of holding from one to two gallons of oil, such bags being pricked with a sail needle to facilitate leakage of the oil.

The position of these bags should vary with the circumstances. Running before the wind they should be hung on either bow—e.g., from the cathead—and allowed to tow in the water. 15

With the wind on the quarter the effect seems to be less than in any other position, as the oil goes astern while the waves come up on the quarter.

Lying to, the weather bow and another position farther aft seem the best places from which to hang the bags, with a sufficient length 20 of line to permit them to draw to windward, while the ship drifts.

9. Crossing a bar with a flood tide, oil poured overboard and allowed to float in ahead of the boat which would follow with a bag towing astern, would appear to be the best plan. As before remarked, under these circumstances the effect cannot be so much trusted. 25

On a bar with the ebb tide it would seem to be useless to try oil for the purpose of entering.

10. For boarding a wreck, it is recommended to pour oil overboard to windward of her before going alongside. The effect in this case must greatly depend upon the set of the current, and the 30 depth of the water.

11. For a boat riding in bad weather from a sea anchor, it is recommended to fasten the bag to an endless line rove through a block on the sea anchor, by which means the oil is diffused well ahead of the boat, and the bag can be readily hauled on board for refilling 35 if necessary.

12. Towing a vessel in a heavy sea, oil is of the greatest service, and may prevent parting the hawser. Distribute from the towing vessel forward and on both sides ; if used only aft the tow alone gets the benefit. 40

Tropical revolving storms, and practical rules for avoiding them.—

1. Tropical revolving storms or cyclones occur for the most part in the tropical or sub-tropical portions of the western sides of the great oceans, with the exception of the South Atlantic ocean where they are unknown. They occur also on the eastern sides of the North Pacific 45 and South Indian oceans, in the Arabian sea and the Bay of Bengal.

2. Revolving storms are so named because the wind in these storms revolves round an area of low pressure situated in the centre. The direction of revolution is anti-clockwise in the northern hemisphere and clockwise in the southern hemisphere. The wind, however, does 50 not revolve round the centre of low pressure in concentric circles but has a spiral movement inwards, towards the centre.

3. Tropical storms are known by various names according to the locality in which they are experienced. In the West Indies, on the Pacific coast of Central America and in the South Pacific ocean they 55 are called hurricanes : in the Indian ocean, Arabian sea and Bay of

Bengal, cyclones : and in the western part of the North Pacific, typhoons.

4. These storms generally originate between the parallels of 5° and 20° of latitude in both hemispheres and as a rule have initially a progressive movement westward, subsequently recurving towards the pole of the hemisphere in which they are generated. Thereafter, they tend to move north-eastward in the northern hemisphere and south-eastward in the southern hemisphere, so that they invade the temperate latitudes where they may gradually acquire the characteristics of the depressions of such latitudes.

5. Tropical storms are most frequent towards the end of the hot season in both hemispheres. In the Arabian sea and Bay of Bengal, however, they have their maximum frequency and are most dangerous during the transition periods at the beginning and end of the monsoon.

6. The diameter of revolving storms may vary from twenty to some hundreds of miles. Their average rate of progress when moving westward is about 10 knots, but after recurving their average speed increases to about 20 knots. It should be remembered, however, that very great variations from these speeds are likely to occur, and especially after recurving the storms sometimes move very quickly, their rate of travel then occasionally being as much as 50 knots.

7. The winds associated with tropical storms are extremely violent, but in the centre, or eye of the storm, light variable breezes or squalls alternating with complete calms are usually encountered. In this region mountainous seas and a heavy confused swell are experienced. Just outside the central region the strongest winds of the storm system are met, accompanied by violent squalls, and in this area, in well developed storms, it is possible that a wind speed of 150 knots in gusts may be attained. With increasing distance from the storm centre the wind generally decreases progressively. The aim of the seaman should therefore be to remain as far as possible from the centre of the storm system.

8. The track followed by the centre of the storm is known as the path of the storm, and the portion of the storm field on the right of the path is called the right semi-circle, and that on the left, the left semi-circle.

9. The semi-circle which lies on the side of the track towards the usual direction or recurvature, i.e., the right semi-circle in the northern hemisphere and the left semi-circle in the southern hemisphere, is known as the dangerous semi-circle. It is so called because a ship caught in it may be blown towards the path over which the centre will pass, or the storm may recurve and the centre pass over her.

10. The semi-circle which lies on the side of the path away from the usual direction of recurvature is known as the navigable semi-circle. A ship situated within this semi-circle will tend to be blown away from the path of the storm centre and the recurvature of the storm will increase her distance from the centre.

11. The indications of the approach of a tropical storm are :—
 60 (a) A swell not caused by the wind then blowing.
 (b) A fall in the barometer which may be divided into three phases :—

(i) A slow fall during which the diurnal variation is still apparent, and which usually occurs from 500 to 120 miles from the centre of the storm.
 65 (ii) A distinct fall during which the diurnal variation is

almost completely masked and which usually occurs from 120 to 50 miles from the centre.

- (iii) A rapid fall usually occurs from 60 to 10 miles from the centre.
- (c) The reading of the barometer being 2 to 3 mb. below the normal for the time of the year is a probable indication of the formation of a tropical storm in the vicinity.
- (d) An appreciable change in force and/or direction of the wind.
- (e) The formation of convergent streaks or bands of cirrus cloud.
- (f) An ugly threatening appearance of the sky, and lurid sky colourings at sunrise and sunset.

12. In order to judge the best way to act if there is reason to suppose a storm is in the vicinity, a seaman requires to know :—

- (a) the bearing of the centre of the storm ;
- (b) the path of the centre ;
- (c) the semi-circle in which the ship is situated ; and in order more easily to determine these matters it will sometimes be better to stop or heave to.

13. If an observer faces the wind, the centre of the storm will be from 12 to 8 points on his right-hand side in the northern hemisphere, and on his left in the southern hemisphere ; 12 points at the beginning of a storm, gradually decreasing to 8 points towards the centre.

14. The course of the storm centre can be approximately determined by taking two such bearings with an interval of from two to three hours between observations, provided that there has been a wind shift during the interval and that allowance is made for the ship's movement.

15. If the wind shifts to the right the vessel is in the right semi-circle, if to the left in the left semi-circle ; if the wind is steady in direction but increasing in force, she is in the direct path of the storm.

16. A further check of the bearing and path of the storm may often be obtained by noting the direction from which the swell is coming and any change in this direction. The swell usually travels directly outwards from the storm centre.

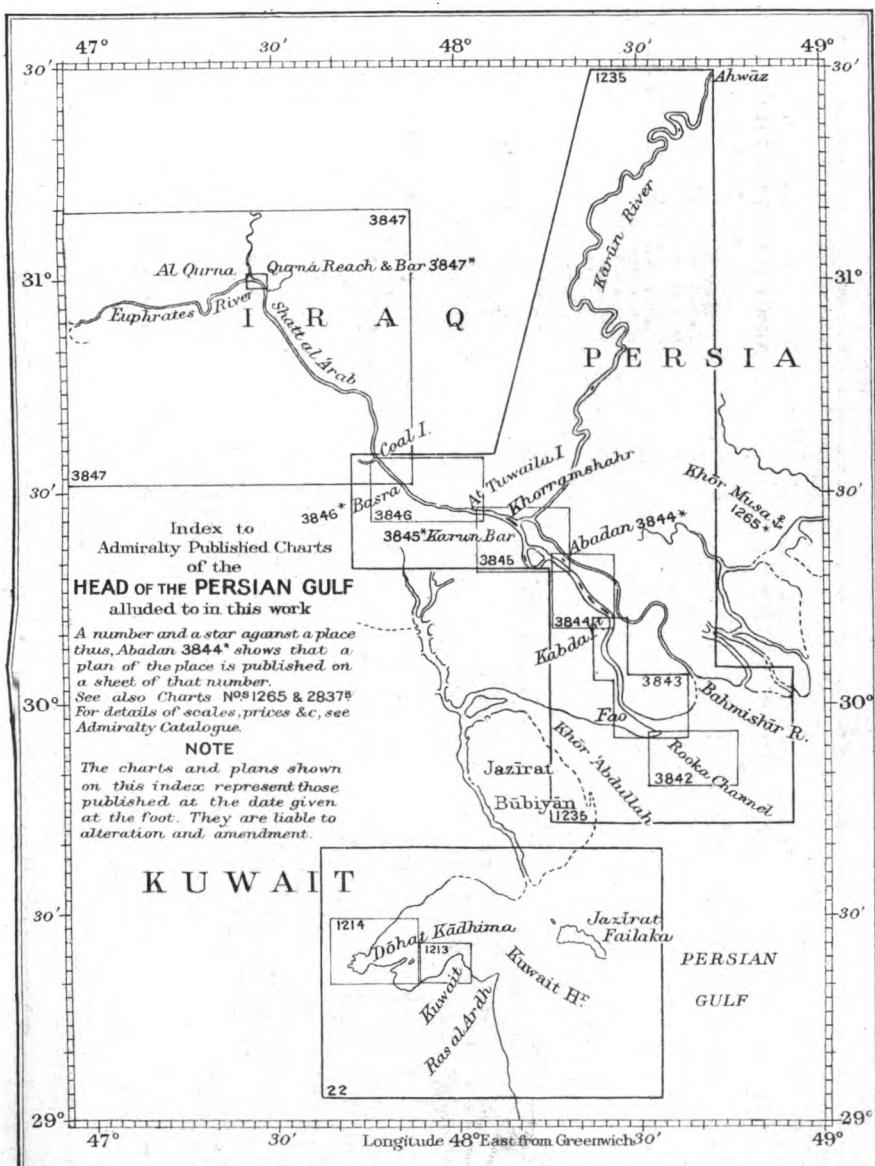
17. If in the dangerous semi-circle, i.e., the right semi-circle in the northern hemisphere and the left semi-circle in the southern hemisphere, a steam vessel should steer to windward away from the assumed path of the storm, or stop and lie to if there is insufficient sea room.

18. If the seaman has reason to believe that his vessel is in the direct path of the storm, or if in the navigable semi-circle (i.e., the left semi-circle in the northern hemisphere and the right semi-circle in the southern hemisphere), he should run with the wind on the starboard quarter in the northern hemisphere and on the port quarter in the southern hemisphere, away from the assumed path of the storm until the barometer begins to rise.

19. If there is insufficient room to run when in the navigable semi-circle, a steam vessel should stop and lie to, and a sailing vessel should heave to on the port tack in the northern and on the starboard tack in the southern hemisphere.

20. If in harbour, or at anchor, a seaman should be just as careful in watching the signs and ascertaining the probable path of the storm centre, as he may be able to point his ship, or shift his berth with advantage.

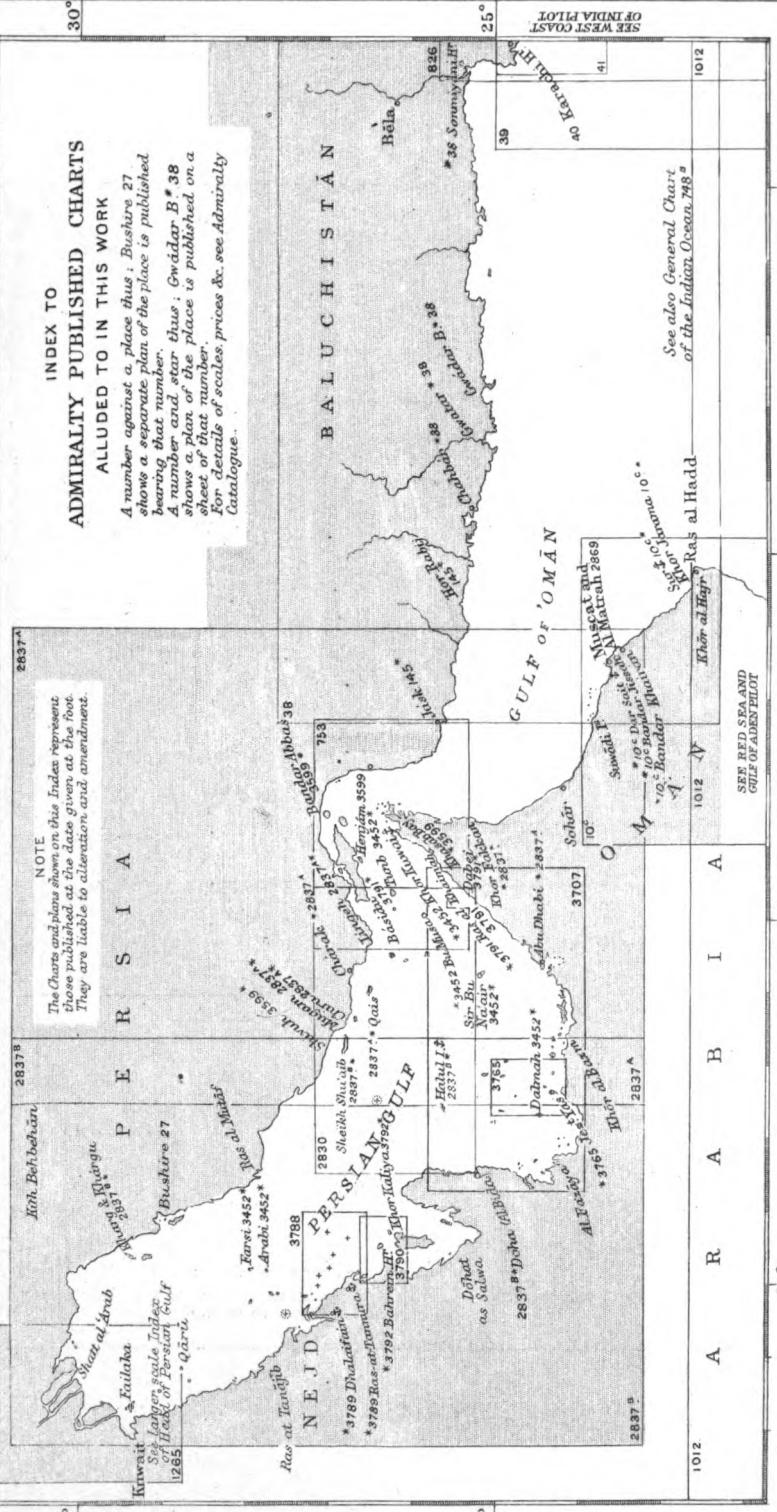
21. In regions where tropical storms are encountered the local meteorological services issue special warning messages by wireless during the storm season giving particulars of the position and probable path of any storm which is in the vicinity. Particulars of these messages are given in the Admiralty List of Radio Signals.



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IMPORTANT.

Details of Lights, Fog Signals, and Time Signals (visual) are not included in this volume; for this information the Admiralty List of Lights, Part VI, should be consulted.

Information regarding Vertical Movement of the Water is not included; for this the Admiralty Tide Tables should be consulted.

Details of W/T information (weather bulletins, storm and navigational warnings, time signals, fog signals, and D.F. stations) are not included; for this information the Admiralty List of Radio Signals should be consulted.

PERSIAN GULF PILOT

CHAPTER I

PERSIAN GULF.—ARABIA.—'IRAQ.—PERSIA.—BALUCHISTAN.—CURRENTS.—TIDES.—TIDAL STREAMS.—SIGNALS.—PORT REGULATIONS.—MISCELLANEOUS INFORMATION.—COMMUNICATIONS.—PASSAGES.—METEOROLOGY.

PERSIAN GULF.—General remarks.—The Persian gulf is comparatively shallow. It is approached by way of the Gulf of 'Omān, which latter may be considered as an arm of the Arabian sea, extending in a north-westerly direction from a line joining Ras al Hadd, at the eastern extremity of Arabia, and Gwātar bay, on the boundary between Persia and Baluchistān, about 185 miles north-eastward; thence through the Strait of Hormuz.

In addition to a description of the shores of the Gulf of 'Omān and the Persian gulf, this volume describes the coast of Baluchistān.

Physical features.—The south-western shore of the Gulf of 'Omān is, in general, steep-to with but few off-lying shoals, though there are some islets near Muscat, situated about 93 miles north-westward of Ras al Hadd, and others about 30 miles farther north-westward. With the exception of Al Bātina, a wide fertile plain extending, from the coast to the foot of the mountains, for about 150 miles north-westward of Muscat, the interior of the country is arid, desert, and mountainous.

The coast of Baluchistān and the northern shore of the Gulf of 'Omān extend, for about 520 miles, in a westerly direction, from the western frontier of British India to Ras al Kūh at the entrance of the Persian gulf, whence the shore trends northward. The whole of this stretch is, in general, clear of off-lying shoals, though there are some in the vicinity of Astola island, (*see* page 73), and Baklang rock (page 84) is an isolated danger. Owing to the small rainfall, the salt nature of the soil, and the physical conformation of the country, it is almost entirely desert, presenting a succession of arid clay plains impregnated with saline matter, and intersected by watercourses. From these plains rise precipitous table-hills, with fantastic peaks and pinnacles, varying in elevation from 2,050 feet (624^m8), at Ras Malān, (page 71) to hillocks only 20 or 30 feet (6^m1 or 9^m1) high. Farther inland, other ranges of mountains, of varying height, extend parallel with the coast, and all appear to be devoid of vegetation.

The coast is barren and indented, but its most characteristic feature is the repeated occurrence of promontories and peninsulas of white

clay cliffs capped with coarse limestone or shelly breccia, all the summits of which are more or less table-topped in form. The intervening stretches of coast are low, in places rising to high white sand hills, or to sand dunes, on which are small bushes and tufts of grass ; 5 in many places the coast is merely a very low strip of sand, backed by extensive salt-water swamps ; off such parts, caution is necessary, for the distance offshore is very liable to be over-estimated.

With the exception of the Hab and Purali, there are no perennial rivers, and, near the sea, the streams, which are frequently dry or 10 nearly so, except after rain, become salt-water creeks, only navigable by small boats. There is no vegetation except, here and there, a clump of date palms near a village or settlement, in the vicinity of which there may be a small amount of cultivation.

The Persian or north-eastern shore of the Persian gulf is mountainous, and in most places steep-to ; it presents a series of rugged and precipitous mountain ranges running, in general, nearly parallel with the coast. These mountain ranges increase in height as they recede inland and, being visible at great distances, are good marks ; some, even, are snow-capped for a great part of the year. Wide 20 valleys separate the mountains, and there are belts of low land of varying width, between them and the sea, which are called, by the Persians, the Garmsir or winter pastures ; the latter being at the southern foot of the mountains, and watered by no river, they are very hot in summer.

25 The Arabian coast, or southern and south-western shore of the Persian gulf, is, with the exception of the north-western side of the 'Omān peninsula, exceedingly low ; from it, for nearly its whole length, reefs and shoals extend as much as from 30 to 50 miles in places. The Arabian coast is, for the most part, a desert of white sand, and extensive tracts are quite uninhabited. Near the villages, or where there are any inhabitants, there are, generally, more or less extensive date groves.

There are numerous islands in the Persian gulf, the two largest being Qishm, off the Persian coast, on the northern side of the Strait 35 of Hormuz, and Bahrein, on the western side of Al Qatar, a large projection in its south-western corner. Some are merely sand islets, while many are, at least partly, of volcanic origin.

The head of the gulf is the low alluvial land of the deltas of the Tigris, Euphrates, Kārūn and other rivers. The north-western end 40 of the gulf is probably silting up, owing to the large amount of alluvium deposited by the great rivers debouching there. The water in the upper part of the gulf is much more salt than that of the ocean.

Caution.—With respect to the descriptions given in this work concerning trees, and the shape and colour of buildings, etc., caution 45 should be exercised, for many new buildings may have been erected, and old ones destroyed, so that such marks, which may at one time have been conspicuous on account of their isolation, shape, or colour, may no longer exist, or may now be difficult to identify. The mariner may find, moreover, that some towns and villages mentioned herein 50 have disappeared, and others not mentioned have sprung up. New places frequently originate through the secession of families, who, being dissatisfied with the chief of their own tribe, emigrate and build a new settlement of their own.

Depths.—The depths in the Gulf of 'Omān and in the Persian 55 gulf are generally great off the high coasts, but less off the low coasts.

Within the Persian gulf, the depth rarely exceeds 40 or 50 fathoms.

(73^m2 or 91^m4), and it decreases to 30 and 20 fathoms (54^m9 and 36^m6) towards the head ; on the Pearl banks, which occupy about one-third of the area of the gulf, the depth is less than 20 fathoms (36^m6). In depths of less than 20 fathoms (36^m6), especially off the Arabian coast, the soundings are irregular, with shallow banks and shoals.

Off the Persian coast, and in the deep part of the gulf, the bottom is generally mud ; on the Pearl banks it is hard sand, coral, and rocks ; and in many places off the Arabian coast, especially northward of Bahrein, it is white clay.

Off the Makrān coast the depths are fairly regular, the bottom being rock, sand, and mud near the land, and mud or clay in depths of over 12 fathoms (21^m9) ; the increase in depth is mostly gradual up to 20 fathoms (36^m6), beyond which it increases rapidly.

Ports and anchorages.—The principal port in the area covered by this work is Basra, in 'Iraq, situated about 72 miles above the entrance of Rooka channel. Others of importance are Muscat, the only port of call for steam vessels in 'Omān ; Dibai, Bahrein, and Kuwait on the Arabian coast ; and Khorramshahr, Bushire, and Bandar 'Abbās, in Persia. Of lesser importance are Pasni and Gwādar in Makrān ; Chāhbār in Persian Makrān ; and Lingeh in Persia. Bandar Shāpūr, the new Persian port in Khōr Müsa, at the head of the gulf, is of growing importance, but is as yet incompletely completed, see page 232.

Though not regular harbours, there are many roadsteads and anchorages both in the mainland and at the islands, where shelter may be obtained.

For list of principal ports and anchorages with particulars of depths, etc., see page 260.

Towns.—The small towns on the shores of the Persian gulf are all very similar ; a square fort of rough stones with loopholed towers at the angles, or several detached round towers ; the Shaikh's house, and perhaps one or two others, of stone, the remainder of mats ; a date grove in the immediate vicinity, and a detached tower or two near the wells, are the invariable components. They are, as a rule, situated near a small creek or backwater, where there is a smooth place for hauling up boats. The large towns are sometimes walled round, and have a larger proportion of stone buildings, but there are no pretensions to architecture, and the houses are seldom of more than two stories.

The *birkeh* is a characteristic of many of the Persian towns and villages on the shores of the gulf ; it is a water reservoir, either oblong and arched over, or circular and domed ; being white, it is often conspicuous from seaward, especially the domed variety.

The *bād-gir* or wind-tower is a feature in many of the villages on the shores of the Persian gulf. It is a square or round, masonry or brick tower, rising 10 or 12 feet (3^m0 or 3^m7) above the roof of the house of which it is the ventilator. The interior is divided vertically into four segments, the partitions being extended several feet above the walls of the actual tower to catch any breath of wind from whichever direction it may blow. The base of the tower opens into the room below, and the seat of honour in the hot season is near this ventilating shaft.

Population.—Languages.—The inhabitants of 'Omān are, for the most part, poor, and a large number of them are nomadic ; though mainly consisting of Arabs, there is a considerable admixture of

foreigners; such as natives of India, Persians, East Africans, and Nubians, whilst people of mixed races are usually found in the larger towns. The estimated population is about 500,000; and that of Muscat and Al Matrah together about 12,500.

5 The language of 'Omān is Arabic; but many persons in Muscat and Al Matrah speak Persian, Baluchi, and Hindustani.

The population of the Arabian coast of the Persian gulf is exclusively Arab, except in the towns of Dibai, Dōha, Bahrein, and Kuwait, where many Persians reside. In the towns they may be trusted, 10 but it is not safe to land unarmed on the mainland, on account of the Bedouin who may be occasionally met and who, for the sake of plunder, attack even their own townsfolk. The population of Nejd is estimated to be about 3,000,000; and that of Hofuf, the largest town, about 30,000. The population of Bahrein is about 120,000; 15 Manāma and Muharraq each accounting for about 25,000. The population of Kuwait town is about 50,000, to which must be added a number of Bedouin, and Persians.

In Makrān and Las Bēla, the population is everywhere sparse; in the former many mixed races occur, varying both in physical 20 and moral qualities; in the latter are Jats, called Lāsis. The people are poor, simple, and primitive; hospitable to strangers and faithful in the performance of duty. They are friendly with and accustomed to Europeans. The language is a dialect of Persian, and approximates the more nearly to that tongue as the western frontier is approached; 25 it is hardly a written language, Persian being generally used in correspondence. The small seaport towns are chiefly inhabited by Arabs. In the larger places an admixture of Persians is found, also Banyans from Sind or Kutch, by whom the very limited trade of the country is chiefly carried on. The rural population is almost 30 exclusively Persian, but Persians do not take to the sea, and all craft sailing from Persian ports are manned by Arabs. The people live in mat huts, which are easily moved, so that a village is often merely temporary. In more permanent settlements, there is a tower-or fort in addition to the huts, and it is only at the towns of Sonmīāni, Ormāra, 35 and Gwādar that masonry or mud houses are found. In 1941, the population of the State of Kalāt, including Kharan was 288,800; and that of Las Bēla, 69,100.

According to the latest estimates, the population of Persia was about 15 millions in 1940, but all figures are conjectural; that of 40 Khorramshahr being about 30,000. Persian is of course the language of the country, but Turkish and Turkish dialects are spoken in the north-western parts.

Outside the towns, the population of 'Iraq is almost entirely tribal. That is, the population is divided into collections of kindred families 45 which form communities under the leadership of their own chiefs or Shaikhs. In the plain there are Bedouin tribes who are nomadic pastors of camels, sheep, and horses. There are also cultivator tribes near the rivers, and in addition semi-settled semi-nomadic tribes and marsh tribes. Except in certain areas in the north, where Kurdish 50 and Turkish are the vernacular, the language of 'Iraq is Arabic. In 1935, the total population was 3,560,456.

Supplies.—Products.—Trade.—Basra is the only port, in the area covered by this work, at which all necessaries can be obtained. At other places the supplies are meagre.

55 The great heat of summer is very favourable to the cultivation of dates, which fruit forms the staple article of food of the inhabitants

of most of the coasts described in this work. Those grown near the Shatt al 'Arab, said to be the finest in the world, are exported, as well as quantities from Al Bātina.

Probably the two most important products of the gulf are pearls and petroleum; the latter is found at the north-western end of the gulf, and refineries have been established by the Anglo-Persian Oil Company at Ābādān, in the Shatt al 'Arab, to which place the oil is conveyed from the fields by pipe line. The extraction of, and, to a lesser extent, the refining of petroleum, is the only important industry in 'Iraq.⁵

The principal exports of 'Omān are dates, pomegranates, dried limes, and dried fish. The imports are rice, coffee, and cotton piece goods, etc.

The principal exports from Nejd are an insignificant quantity of dates, hides, and ghī (clarified butter). The imports are piece goods,¹⁵ tea, sugar, coffee, and rice. The products consist of dates, wheat, barley, fruit, hides, wool, ghī, and abas (Arab cloaks), in addition camels, horses, donkeys, and sheep are reared.

The chief imports of Bahrein are rice, wheat, sugar, coffee, piece goods, tea and ghī; the exports are similar but with the addition of pearls.²⁰

The importation of arms and ammunition into Bahrein and Kuwait, except with the consent of the British Government, is prohibited by treaty; and that of alcoholic liquors and drugs is prohibited by local regulation, though permission is granted to Europeans to import such articles for their personal use.²⁵

The principal exports of Persia are mineral oil products, carpets, raw cotton, wool, fresh and dried fruit, furs and skins, rice and opium; the chief imports are cotton piece goods, sugar, motor vehicles, machinery, metals, cement and tea.³⁰

The principal exports of 'Iraq are oil, wheat, barley, dates, wool, cotton, hides and skins; the chief imports are textiles, iron and steel, machinery, automobiles, sugar, tea, coffee, tobacco, soap, and cement.

Currencies.—Weights and measures.—There is no national coinage in 'Omān; the current money there and at Bahrein and Kuwait is the Indian rupee and the Austrian Théresa dollar; the rate of exchange varies.³⁵

The currency of Nejd is based on the gold standard, 10 silver *riyals* being equal to one pound sterling; the riyal is divided into eleven *qarsh miri*, and the qarsh miri into two *qarsh darij*.⁴⁰

On the Makrān coast, the Indian rupee and copper pice, and the Théresa dollar are all used. The Indian coinage is probably the best known.

In Persia, the monetary unit is the rial = 100 dinars; 100 rials = one pahlevi. Exchange has been controlled since March 45 1936.

In 'Iraq, the monetary unit is the 'Iraqi dinar = 5 riyals = 20 dirhams = 1,000 fils. Silver coins are 50 and 20 fils; other coins are 10, 4 (nickel), 2 and one (bronze) fils. There are notes for $\frac{1}{2}$, $\frac{1}{4}$, one dinar, 5, 10, and 100 dinars.⁵⁰

Weights and measures in 'Omān vary somewhat from place to place. The weights in use at Muscat and Al Matrah for the Sultan's Customs are based on the *maund* or *mann*, equivalent to about 8 lb. 14 $\frac{1}{2}$ oz.; but the bazaar *mann* equals only about 8 lb. 8 oz. The unit of length is the *dhrá*; this is the cubit or distance from a man's elbow to the tip of his middle finger.⁵⁵

The Arabs have no definite measure of distance, which by them is most vaguely estimated.

On the Makrān coast, both the Indian *maund* and the English weights are understood at the telegraph stations.

5 In Persia, the metric system of weights and measures is in force. The kilogram, equivalent to one-third of the Tabriz batman, is the unit for weights, and the metre for measures.

In 'Iraq, the metric system is being gradually introduced. The principal local weights are :—

10	1 hogga = 2·8 lbs. (approx.)
	1 man = 56 lbs. (approx.)
	1 wazna = 224 lbs. (approx.)
	1 tughar = 4,480 lbs. (approx.)

15 In addition to the metre and English yard, the dhra of 29·38 inches, and the Aleppo dhra of 27 inches are used. The principal measure of area is the mishara = 0·62 acres.

Pearl fishery.—The pearl fishery gives employment to the greater part of the maritime population of the Persian gulf. The boats vary in size from 10 to 50 tons, and their crews from 8 to 100 men. The 20 chief pearl market for the Persian gulf is at Manāma, at the northern end of Bahrein island, and there are others at Dibai and Kuwait. The pearl trade off the Persian coast is now negligible.

There are three seasons for the pearl fishery, the first being the *Khanchia*, the second the *Ghaus*, and the third the *Radda*. The 25 first lasts for from 25 to 30 days, roughly from April 1st to 30th ; the second extends over May, June, July, August, and the first ten days of September ; and the last continues for a further 25 days or more, depending on the weather, or until about October 5th or 10th. Between the middle of May and the end of October, more than 500 30 boats are engaged in the pearl fishery.

The pearl banks appear from time immemorial to have been open without distinction to the Arabs of the entire littoral, and it would be futile here to attempt to specify any definite tribal limits, but the external boundaries are well known, and all intrusion is resented.

35 Nearly all the towns on the Arabian side, and many on the Persian, send boats to the fishery.

The fishery is pursued on any banks where the bottom is hard and level without rugged rocks ; the average depth is 8 fathoms (14^m6), and the extreme depth about 14 fathoms (25^m6). The general 40 Arabian name for such a bank is *heir*. Of these banks, the names and positions of no less than 184 are known between Dibai and Ras at Tannūra, or between the parallels of 24° 10' N. and 27° N., and the meridians of 50° E. and 55° E., whilst there are also 217 banks known to the fishermen, and 24 different descriptions of pearls. The 45 longest time a diver can remain under water does not exceed one minute and a half, and only a few exceed one minute.

Health.—In spite of the general dryness of the coastal regions, malaria is endemic throughout the year. The worst cases occur in the late summer and autumn and the disease is less prevalent in the 50 period from January to April. Yellow fever is unknown.

Cholera and plague sometimes occur. Smallpox is more frequent ; a small encampment at a short distance from an Arab town is often a kind of lazaretto for smallpox, and should be avoided. Conjunctivitis and trachoma is extremely prevalent among the natives.

55 The climate of the Persian gulf is one of the most trying imaginable, though perhaps on the whole not unhealthy for Europeans. The

Intense heat of the summer is aggravated by the humidity of the atmosphere. Although the temperature is then more agreeable and apparently better suited to Europeans, experience shows it to be not the most healthy season.

The hot season does not seem to be absolutely unhealthy ; sea-men suffer from aggravated prickly heat, boils, etc., but if they are kept out of the sun, and ventilation is attended to, there will probably be but little serious sickness. Awnings must be spread, and the men should sleep on deck, where the dew does not appear to have an injurious effect. Absolute necessity alone can justify the exposure ¹⁰ of the men to the sun, and tropical helmets should be insisted on.

Kuwait is the most healthy town in the gulf, and malaria is practically unknown there.

Although the figures of relative humidity given in the tables on pages 38-44 may not appear unduly high, they must be considered ¹⁵ in relation to the comparatively high temperature of the air. The temperature shown by a wet bulb thermometer gives a better measure of atmospheric conditions as affecting the human body. Thus, it is generally supposed that climates with an average wet bulb temperature of over 70° for the year are unsuitable for permanent settlement by ²⁰ white races ; when the wet bulb stands at 85°, heat-stroke is likely to occur, and at 88°-90° in still air the ordinary cooling function of the body can no longer operate, even in the case of a man stripped to the waist.

ARABIA.—Sultanate of Muscat and 'Omān.—Those portions, ²⁵ dealt with in this work, of the coasts of this Muhammadan state may be considered in three divisions, namely : 'Omān, Al Bātina, and Ruūs al Jibāl.

The coast of 'Omān extends from south-westward of Ras al Hadd to just beyond Ras al Hamar, nearly 100 miles north-westward, ³⁰ and includes the town of Muscat ; that of Al Bātina is contiguous to that of 'Omān, and extends from Hail al 'Amair to Khatmat Mīlāha, a distance of about 140 miles ; while Ruūs al Jibāl is a detached province, at the extremity of the promontory forming the southern side of the entrance of the Persian gulf, extending from the village of ³⁵ Al Karsha, in Dōhat Dibba, to Tibba, on the western side of the promontory, and including the islands lying close off the promontory.

The Sultan is an independent potentate who has commercial treaties with France and the United States of America as well as with Great Britain. Since the end of the eighteenth century, British influence ⁴⁰ has been, in general, predominant in 'Omān, and friendly relations have always been maintained between the Sultan and the Government of India. The Governments of Great Britain and India are represented, in Muscat, by a Political Agent who is an officer of the Indian Political Department.

In addition to his possessions in Arabia, the town and port of Gwādar in Makrān (*see* page 77), belong to the Sultan of Muscat and 'Omān.

Trucial 'Omān.—The coasts of the districts embraced under this title extend from Ras ash Sha'm, on the western side of the promontory, terminating in Ruūs al Jibāl, to a position about 10 miles ⁵⁰ southward of Al 'Oqair, on the western shore of Dōhat as Salwa, in the south-western corner of the Persian gulf. Ash Shumiliya, in the Gulf of 'Omān, between Al Bātina and Ruūs al Jibāl, is also a portion of Trucial 'Omān.

The Trucial States comprise Ras al Khaima, Umm al Qaiwain, ⁵⁵

'Ajmān, Shārja, Dibai, Abu Dhabi, and Al Qatār ; they are independently administered tribal principalities, governed by independent Arab Shaikhs.

The Trucial Shaikhs all have treaty engagements with Great Britain, and H.M. Government is represented, at Shārja, by an agent of the Political Resident in the Persian gulf.

Principality of Bahreīn.—This island principality, situated at the entrance of Dōhat as Salwa, is an independent Arab State under the protection of H.M. Government ; but it is not a British Protectorate.

10 Kingdom of Nejd.—In the Persian gulf, the coastline of this kingdom extends from a position about 10 miles southward of Al 'Oqair to a position about 10 miles southward of Ras al Khafji, about 200 miles north-westward ; it is bordered, on its southern side, by the Trucial State of Al Qatār, and on its northern side by the Principality of Kuwayt, and may be said to embrace the district known as the Hasa. The kingdom is one unit of H.M. Ibn Sa'ud's dominions, the full title of which is the kingdom of Saudi Arabia.

The administration of Nejd is simple, and of a patriarchal character, without ministers of State, the King being usually represented by a **20 Viceroy.**

Principality of Kuwayt.—The coast of this independent Arab State, under British protection, extends from a position about 2 miles southward of Ras al Qaliya to the junction of Khōr as Sabiya and Khōr Shetana, about 70 miles northward. The islands of Umm **25 al Marādim**, Qārū, Al Kubr, Kurein, Failaka, 'Auha, Mashjang, Būbiyān, and Warba are dependencies of the Sultan of Kuwayt. The area between a position about 2 miles southward of Ras al Qaliya and a position about 10 miles southward of Ras al Khafji is a neutral zone.

The Sultan's rule is personal and autocratic ; in Kuwayt town his **30 authority** is strictly enforced, but in the country districts, where control is difficult, it is necessarily more tolerant.

'IRAQ.—The maritime coast of the Kingdom of 'Iraq extends from Khōr Shetana to the mouth of the Shatt al 'Arab. Within the river, the western bank only is in 'Iraqi territory, as far as the mouth **35** of Khaiyin canal, about $3\frac{1}{2}$ miles above the entrance to Hafar channel, but above that point both banks belong to the kingdom of 'Iraq.

The legislative power is vested in Parliament, with the King ; Parliament consists of an appointed Senate and an elected Chamber of Deputies.

40 'Iraq is divided into fourteen main administrative divisions or Liwas, each administered by a Mutasarrif, who is responsible to the Minister of the Interior, but is also the agent and representative of the other Ministries. Each Liwa is divided into two or more Quadhas, administered by a Qain Maqqam ; and each Quadha is sub-divided **45** into two or more Nahiyahs, administered by a Mudir.

PERSIA.—The riverain and maritime coasts on the south of Persia, which is also known as Iran, extend from Khaiyin canal, in the Shatt al 'Arab, to the eastern boundary of Persian Makrān, in Gwātar bay, and include the whole of the north-eastern shores of the **50** Persian gulf and Gulf of 'Omān.

This kingdom, the head of which is the Shah, possesses a Constitution. There is a National Assembly or Majlis, and the government of the country is in the hands of a Cabinet.

The country is divided into thirty-three provinces, which are

governed by Governors-general (Wali) or Governors (Hakim), who are directly responsible to the central government.

The maritime provinces are Khūzistān, administered by the Governor-general at Ahwāz; Bushire, administered by the Governor of the Persian Gulf Ports and islands; and the districts of Dashti and Dashtistān at Bushire, and Makrān, administered by the Military Governor at Iranshahr; this last is a military division of Persian Baluchistān, under military control, and does not at present form part of one of the civil provinces.

The various provinces are divided into districts, the administrators 10 of which are subordinate to the governors of their respective provinces.

The only maritime district in Khūzistān is Khorramshahr, the coast of which extends from Khaiyin canal to Hindīān; it is administered by the Governor of Khorramshahr.

From north to south, the coastal districts and sub-districts in the 15 province of Bushire are Dashtistān, which includes the sub-districts of Liravi, Hayāt Dāud, Hilleh Rūd and Angāli; Bushire; Dashti, which includes Tangistan; Shībkūh; Lingeh; and Bandar 'Abbās, which includes Biābān.

Liravi is administered by the Khān of Liravi, and its coast extends 20 from Hindīān to Sabzpūshān.

Hayāt Dāud is administered by the Khān of Bandar Rig, and its coast extends from Sabzpūshān to Khōr-al-Qusair.

Hilleh Rūd is administered by the Khan of Hilleh Rūd and its coast extends from Khōr-al-Qusair to Ramleh on the Hilleh Rūd 25 river.

Angāli is administered by the Khān of Angāli, and its coast extends from Ramleh to Shif.

Bushire town and district is administered directly by the Governor of the province; it extends from Shif to Halileh.

Dashti is administered by various feudal chiefs subordinate to the Governor of Lingeh; its coast extends from Halileh to and including Tāhīri.

Shībkūh is administered by the Shaikh of 'Asalū; its coast extends from Banak to Chārak.

Jehan-Girieh is administered by the Governor of Lingeh, and its coast extends from Chārak to Khamīr.

Bandar 'Abbās is administered by the Governor of Bandar 'Abbās, and its coast extends from Khamīr to Jāsk; but the sub-district of Biābān, the coast of which extends from Kūhistak to Jāsk, is administered by a deputy-governor at Jāsk.

Persian Makrān is administered by a Military Officer at Chāhbār; its coast extends from Jāsk to the Perso-Kalāt frontier in Gwātar bay.

BALUCHISTĀN.—Makrān.—This is the south-western division 45 of the native State of Kalāt in Baluchistān, and its coast extends from the frontier of Persian Makrān, about 8 miles eastward of Gwātar, to that of Las Bēla, at Khōr Kalmat; excepting, however, the town and port of Gwādar and an area of about 307 square miles surrounding it, which are held by the Sultan of Muscat and 'Omān.

The native state of Kalāt consists of a confederacy of tribal groups, headed by the Khān of Kalāt; the Khān is supervised in the general administration of his State by a British Political Agent.

Las Bēla.—This is a native State in Baluchistān, and lies between Kalāt and British India; its seaboard extends from Khōr Kalmat 55

to the Hab river. The State is ruled by a chief with the style of Jam, and its control is supervised by the British Political Agent in Kalāt.

CURRENTS.—Arabian sea.—The currents of the Arabian sea are governed mainly by the monsoons. Of these, the South-west monsoon, being the stronger wind, gives rise to the stronger currents. Monsoon currents in general are not very steady, and to this rule the Arabian sea currents form no exception. Sets in any direction may be experienced, but those in directions corresponding to the prevailing monsoon are more frequent. The currents are less variable during the South-west monsoon than during the North-east monsoon.

In the central part of the sea, the mean set is easterly during the South-west monsoon. Owing, however, to the conformation of the coasts, the effect of the monsoon is to produce a clockwise circulation in a wide belt of water adjacent to the coasts. Thus the current off the south-east coast of Arabia is north-east, off the Baluchistān coast, easterly, and off the west coast of India, south-south-easterly. The whole system of current runs the opposite way during the height of the North-east monsoon, from November to January, the coastal circulation being counter-clockwise. The general current direction in the centre of the sea is then north-westerly to westerly. In October, the transition month, the currents are generally weaker and more variable.

During the latter part of the North-east monsoon period, when the wind is less strong, the circulation in the central part of the sea remains westerly, as during the height of this monsoon, from November to January, but the coastal circulation is reversed in direction to clockwise, thus being the same as it is later in the year, when the South-west monsoon is prevalent. This reversal is not simultaneous in all coastal regions, and takes place from about the end of January onwards, but is complete everywhere by the end of February, except on the south-east coast of Arabia where it may be somewhat later. This reversal is in opposition to the direct effect of the North-east monsoon, but is probably an indirect effect of the earlier stronger phase of this monsoon, which cools the water at the head of the Arabian sea. The temperature difference so set up, relative to the warmer water southward, induces a clockwise current which is strong enough to overcome the direct effect of the weakened monsoon. This reversed current persists until the South-west monsoon sets in and, by its direct effect, strengthens it.

South-east coast of Arabia.—The coastal circulation is strongest from May to July, when the mean resultant drifts are from 14 to 19 miles per day. During this quarter the great majority of currents set between north and east, and a considerable proportion of these exceed one knot. An occasional drift exceeding 2 knots may be experienced, particularly south of lat. 15° N. Off the coast from Ras al Hadd to lat. 18° N. the mean set is between north and east from April to October inclusive, but its strength is much diminished after the end of August. It is strongest in June. From November to January, inclusive, the mean set is between west and south. Less information is available about February and March; the latter is the period of transition when the circulation on this part of the coast is undergoing reversal, so that both north-easterly and south-westerly currents probably occur.

Makrān coast.—The currents off this coast are variable and relatively weak. They are somewhat less variable during the South-west

monsoon, when the resultant mean drift is easterly. Of 20 currents observed during the months of May to October, in the period 1910 to 1931, between the Makrān coast and lat. 24° N. only one slightly exceeded a rate of one knot.

Gulf of 'Omān.—The currents of this gulf are not well known. 5 The mean resultant set and drift of all currents observed in the gulf for the period 1910 to 1931 is given below.

	Mean set and drift (Miles per day).	Number of observations.	Percentage of currents exceeding $\frac{1}{2}$ knot.
Nov. to Jan. . .	334° $2\frac{1}{2}$	41	34
Feb. to April . .	336° $2\frac{1}{2}$	43	19
May to July . .	122° $1\frac{1}{2}$	69	39
Aug. to Oct. . .	196° 1	55	31

These 208 currents were variable in direction. Only 8 of them exceeded one knot, the highest proportion of these being in the period from August to October. 10

Along the coast forming the southern shore of the Gulf of 'Omān the current usually sets north-westward from April to August inclusive, thus branching off at Ras al Hadd from the main clockwise coastal circulation of the Arabian sea. In September when, as stated above, the main circulation is much weakened, the currents along the southern shore of the gulf are variable. From October to February the shamāl prevails in the gulf. In October, the current along the southern shore is still variable, but with usually a predominance of south-easterly sets. In November, December and January the current sets south-eastward from the vicinity of the Daimāniyāt islands to Ras al Hadd. This is in conformity with the reversed circulation of the North-east monsoon, south-westerly off the Arabian coast southward of Ras al Hadd. In February and March the current along the southern shore of the gulf is variable, this being also a transition period of the Arabian coast section of the main coastal circulation. 25

Persian gulf.—Little is known of the currents of the Persian gulf, and the current observed at any time is the resultant of the true current and the tidal stream. In summer, the South-west monsoon of the Indian ocean is stated to drive the water into the Persian gulf, 30 and to raise the general level about one foot ($0^{\text{m}}3$).

At the south-eastern end of the Persian gulf, observations continued for eight days during April, 1930, showed a current running into the gulf, at an average rate of 6 miles a day. It is probable that this rate is considerably increased in summer, when evaporation 35 is greatest and south-easterly winds occur, and that the rate is very small, or the direction of the current reversed, in winter, when evaporation is least and north-westerly winds prevail. See also page 267.

Effect of a tropical revolving storm on the current.—In the 40 vicinity of a tropical revolving storm the set and drift of current may be markedly different from that normally to be expected. Comparatively little is known about such currents, particularly near the centre of the storm, since navigators avoid the centre whenever possible and conditions within the storm field generally are unfavourable 45 to the accurate observation of current.

The primary cause of the currents is the strong wind associated with the storm; the strength of current produced by a given force of wind varies with latitude and is greatest in low latitudes. For the latitudes of tropical storms, say 15° to 25° , a wind of force 10 would 50

produce a current of about one knot. It is believed that the strength of the currents of tropical storms is, on the average, the same as that which wind of similar force, unconnected with a tropical revolving storm, would produce. These currents, at the surface of the water,
 5 set at 45° to the right of the wind direction (in the northern hemisphere) and therefore flow obliquely outward from the storm field though not radially from the centre.

Unless due allowance is made for these sets, very serious errors in reckoning may therefore arise. It is reported that, in one case,
 10 a vessel experienced a south-easterly set of more than 50 miles, under conditions when the set normally to be expected was south-westerly. In another case, an unexpected south-south-westerly set of 60 miles was experienced in 18 hours. These are examples of currents of abnormal strength, which are occasionally met in the vicinity of
 15 tropical revolving storms, and which cannot be accounted for by the wind strength. The possibility of such an experience should be borne in mind, particularly near, say, within 100 miles of the centre of the storm.

Other currents, not caused directly by the wind, may flow in
 20 connection with these storms, but are probably weak and therefore negligible in comparison with the wind current.

The above remarks apply to the open ocean. When a tropical storm approaches or crosses an extended coastline, such as that of Florida, a strong gradient current parallel to the coast will be produced by the piling up of water against the coast ; the sea-level may rise by as much as from 8 to 15 feet on such an occasion.

Whether the storm is in the open ocean or not, there is a rise of sea-level inwards to its centre which compensates for the reduction of atmospheric pressure. The extent of this rise is never great, from
 30 one to two feet according to the intensity of the storm ; it produces no current as long as the storm is not changing in intensity. If the storm meets the coast, however, the accumulation of water at its centre will enhance the rise of sea-level at the coast mentioned above and so produce a stronger gradient current along the coast.

35 Sea.—Swell.—The swell of the South-west monsoon rolls round Ras el Hadd, and is felt off Muscat, and even near the entrance of the Persian gulf, though there only slightly. Sometimes there is a heavy swell in the entrance of the Persian gulf for several hours, without any wind either preceding or following it ; such a swell is usually,
 40 however, the forerunner of a gale.

From June to September, a heavy swell, caused by the South-west monsoon, rolls in on the Makrān coast. The swell comes from west-south-west or south-west at Karachi, from south-south-west at Gwādar, from about south at Chāhbār, and from south-east at Ras
 45 Jāsk. It decreases gradually from Gwādar to Ras Jāsk, at which latter it is a light ground swell. The swell is usually much heavier than that which would be due to the strength of the wind on the coast, but it varies much, and during a break in the monsoon is often light ; sometimes it disappears in early September, at other times it continues
 50 heavy during the greater part of that month, though by the end it has always ceased.

On the occurrence of a cyclone or storm in the Arabian sea, a considerable swell rolls up from the south, or a heavy ground swell with surf on the coast may be experienced.

55 In the Persian gulf, the sea gets up quickly, and is short and hollow. At the entrance, when the tidal stream is strongly opposed by a heavy

shamāl, it is particularly troublesome, breaking very heavily; it is often out of all proportion to the force of the wind, but quickly subsides after a gale. During a heavy shamāl, there is a very high sea off Muscat, and also on the Makrān coast.

TIDES.—TIDAL STREAMS.—The information available on 5 these subjects is meagre. It would appear that the surface drift, due to the winds, is sometimes so great that the tidal streams, when opposed to it, fail to overcome it, and the resultant stream continues in one direction, merely changing its rate.

In the Persian gulf, great variations occur in the type of tide, 10 and the information available is insufficient for any reliable general description to be given; tides of semi-diurnal type appear, however, to be usual in the northern part of the gulf, and tides of diurnal type in the southern part.

Off the southern part of the south-western side of the Gulf of 15 'Omān, the tidal streams are almost imperceptible.

Off the Makrān coast, from Karachi to Gwātar, the tidal stream sets eastward during the rising, and westward during the falling tide; but westward of Gwātar bay it sets westward during the rising, and 20 eastward during the falling tide.

In the northern part of the Gulf of 'Omān, the general set of the stream is north-north-westward and south-south-eastward. The north-north-west-going stream attains a rate of from half a knot to 2 knots, and is strongest on the western side, as Ras Masandam is approached. The south-south-east-going stream attains a rate of 25 from one to $1\frac{1}{2}$ knots.

In the Persian gulf, the tidal streams are subject to great variation in type, semi-diurnal streams occurring in some parts, and diurnal streams in others. The type of stream in any locality is not necessarily the same as the type of tide, and diurnal streams may occur where the tide is semi-diurnal, and vice-versa. For this reason, the 30 time of the turn of the stream, and its rate, in any locality, bear no fixed relation to the vertical movement of the tide in that locality. See also pages 263 to 267.

Information available regarding the streams depends, generally, on a few hours' observations only, and conclusions drawn by the observers, 35 though correct at the time, may be quite erroneous during other astronomical conditions. Information regarding tidal streams, given on the charts, must therefore be regarded as unreliable, and used with caution.

Northward of Ras al Kūh, the streams become very strong, and 40 they attain their greatest rate, of about 4 knots and probably more at springs, at Ras Masandam, where eddies and races are formed near that point and between it and As Salāmah wa Banāt-hā islets. On the eastern shore of the entrance of the gulf, the rate of the streams is less, and is perhaps from 2 to 3 knots off Girau. See also page 45 263..

SIGNALS.—Aircraft distress signals.—Any aircraft in grave or imminent danger, and requiring immediate assistance, will make or display one or more of the following signals:—

1. The International distress signal S O S by wireless telegraphy, 50 as prescribed in the Admiralty List of Radio Signals.
2. The spoken word " Mayday " by wireless telephony, as prescribed in the Admiralty List of Radio Signals.

3. The International distress signal S O S by visual signalling on any sound apparatus.
4. The International Code flag signal N C.
5. The International Code distance signal, consisting of a square flag having above or below it a ball or anything resembling a ball.
6. A continuous sounding of any sound apparatus.
7. A succession of *red* pyrotechnic lights fired at short intervals, or a *red* flare from which, at intervals of about *three seconds*, a *red* light is ejected.
10. **Urgent signals from aircraft.**—An aircraft, having a very urgent message to communicate to a vessel, concerning the safety of any aircraft, vessel or person, within range of assistance, will fly low round the vessel, firing a succession of *green* pyrotechnic lights, or will flash a succession of *green* flashes with the daylight signalling apparatus. The aircraft will, then, signal the message as prescribed in the International Code of Signals; or alight alongside the vessel; or, if unable to signal or alight, will fly towards the aircraft, vessel or person in distress. When the *green* pyrotechnic lights are seen by the vessel, a boat is to be prepared for lowering.
15. The signals from the aircraft are to be acknowledged by the vessel by flashing the answering sign, whether by day or at night, with the daylight signalling apparatus; if no such apparatus be carried, the answering pendant is to be hoisted close up, by day, and, at night, a *white* light is to be waved in a position away from other sources 25 of light.
20. If an aircraft is in difficulties which compel her to land, but is not in need of immediate assistance, she will fire a succession of *white* pyrotechnic lights, or, at night, if not in possession of pyrotechnic lights, she will make a succession of short flashes with her navigation 25 lights.

Non-urgent signals from aircraft.—An aircraft wishing to communicate with a vessel on a matter of no urgency, will fly around the vessel to attract attention.

PORT REGULATIONS.—Persia.—The following are extracts 35 from the regulations for the ports of Persia, dated 14th of January, 1939:—

Article XXIV.—Before entering a port a vessel must display a square yellow flag until the completion of the quarantine formalities. With the exception of the pilot and the official of the Public Health 40 Administration, no person may board or leave the vessel before completion of the quarantine formalities and the medical inspection.

Authority for the vessel to establish communication with the shore will be given after the completion of the quarantine formalities and when it has been confirmed that there is no danger of any epidemic on 45 board. The quarantine flag may then be hauled down.

Article XXVIII.—The Master of every vessel arriving at a Persian port is required to carry out the following formalities:—

- (1) To display the Persian flag at the foremast so long as the vessel remains in Persian territorial waters.
- 50 (2) To give at least 24 hours' notice to the Port Office of his intended arrival if the vessel is foreign, and to produce, on request, her plan and log which must be signed on each page, the blank spaces being ruled through and signed.
- (4) Customs formalities: A document must be transmitted to the Port Office, within 24 hours of arrival, giving the name of the 55

vessel, her tonnage, itinerary, the name of the owner, a nominal list of passengers and crew, a copy of the manifest and details of the cargo consigned to the port.

(5) The berth for each vessel will be assigned by the Port Administration with due regard to the views of the Customs Administration. The Master of the vessel must retain in the vicinity of the port a sufficient number of men in order that the vessel may be moved in case of necessity, or, if so directed, by the authorities.

Article XXIX.—No vessel may discharge her cargo at any place 10 where there is no Customs Office or establish communication with the shore there.

Article XXXV.—No vessel may leave a Persian port or the coast without permission which will be granted at once after the completion of the necessary formalities and the payment of Customs charges and 15 port dues.

Article XLIII.—Masters of vessels having explosive or inflammable substances on board are required to give notice thereof to the Port Administration before entering.

Article XLIV.—No vessel may enter a port or proceed alongside 20 before having discharged any dangerous substances which have reached their destination. The Customs Administration must be notified in advance.

Article LVIII.—Vessels navigating in narrow waterways, canals and inlets must reduce speed as necessary and pass at a sufficient distance 25 from vessels displaying a red flag.

MISCELLANEOUS INFORMATION.—Submarine cables.—

The following articles are taken from the International Convention for the Protection of Submarine Telegraph Cables, of 14th March, 1884 :—

II. It is a punishable offence to break or injure a submarine cable, 30 wilfully or by culpable negligence, in such manner as might interrupt or obstruct telegraphic communication, either wholly or partially, such punishment being without prejudice to any civil action for damages.

This provision does not apply to cases where those who break or 35 injure a cable do so with the lawful object of saving their lives or their ship, after they have taken every necessary precaution to avoid so breaking or injuring the cable.

V. Vessels engaged in laying or repairing submarine cables shall conform to the regulations as to signals which have been, or may be, 40 adopted by mutual agreement among the High Contracting Parties, with the view of preventing collisions at sea.

When a ship engaged in repairing a cable exhibits the said signals, other vessels which see them, or are able to see them, shall withdraw to or keep beyond a distance of one nautical mile at least from the 45 ship in question, so as not to interfere with her operations.

Fishing gear and nets shall be kept at the same distance.

Nevertheless, fishing vessels which see or are able to see a telegraph-ship exhibiting the said signals, shall be allowed a period of twenty-four hours at most within which to obey the notice so given, during 50 which time they shall not be interfered with in any way.

The operations of the telegraph-ships shall be completed as quickly as possible.

VI. Vessels which see, or are able to see, the buoys showing the position of a cable when the latter is being laid, is out of order, or is 55

broken, shall keep beyond a distance of one-quarter of a nautical mile at least from the said buoys.

Fishing nets and gear shall be kept at the same distance.

VII. Owners of ships or vessels who can prove that they have sacrificed an anchor, a net, or other fishing gear in order to avoid injuring a submarine cable, shall receive compensation from the owner of the cable.

In order to establish a claim to such compensation, a statement, supported by the evidence of the crew, should, whenever possible, 10 be drawn up immediately after the occurrence ; and the master must within twenty-four hours after his return to or next putting into port, make a declaration to the proper authorities.

The latter shall communicate the information to the Consular authorities of the country to which the owner of the cable belongs.

15 Pilots.—In the Persian gulf, generally, pilots are now seldom employed, especially as the men offering their services usually possess local knowledge only ; it should be borne in mind that pilots taken on board for the Arab coast are only to be depended on for certain localities.

20 For pilots for particular places, such as the Shatt al 'Arab and Bahrein harbour, etc., see the body of this work.

Deratisation.—In accordance with Article 28 of the International Sanitary Convention of 21st June, 1926, Deratisation can be carried out and Deratisation and Deratisation Exemption certificates can 25 be issued to vessels at the following place within the limits of this work :—Bushire and Basra.

Native craft.—Part of the trade between the Persian gulf and India, the Red sea, and the East coast of Africa, is carried on in native vessels called by the Arabs *bāgala* and *bum*, similar Indian-built vessels being called *kutiyah* and *dangiyah*, respectively.

The *bāgala* and *dangiyah* are clumsily rigged vessels, of from 100 to 400 tons, with a huge mainmast and lateen sail, and a small lateen mizen. They sail well in moderate winds, but do not go to sea in the South-west monsoon. The *balam* is a somewhat similar craft, 35 though smaller.

The smaller vessels used in the pearl fishery and for the coasting trade, of from 10 to 120 tons, are called *sambuq*, *shu'ai*, *jalibut*, *mashuwah*, *batil*, and *bākara* ; they are all rigged similarly to the *bāgala*, except that they do not have the mizen and smaller lateen sail. The 40 *sambuq* is pre-eminently the pearl boat of Kuwait and Bahrein, though the *jalibut* and *mashuwah* are also commonly used as such.

The term *dhow* is unknown to the natives of the Persian gulf littoral, but is used by Europeans to denote any native craft.

45 Fuel.—Coal can be obtained at Basra. Fuel oil can be obtained at Abādān and Basra.

Repairs.—Repairs can be effected at Basra, where also the services of divers are available.

For particulars of docks and patent slips, see Appendix I.

50 Standard time.—The standard time kept in Persia is that of the meridian of 52° 30' East longitude, or 3½ hours fast on Greenwich mean time.

The standard time kept in 'Iraq is that of the meridian of 45° East longitude, or 3 hours fast on Greenwich mean time.

55 Consuls.—British Consular officers are stationed at Muscat, Bandar 'Abbās, Bushire, Khorramshahr, Basra and Ahwāz.

COMMUNICATIONS.—There is regular steamer communication between India, Bushire, Khorramshahr and Basra, and there is a subsidiary service between India and the ports and anchorages on the Makrān coast and in the Persian gulf.

There is communication by air between Europe, Baghdād, Basra, Bahrein, Shārja and India. There are also services by air between Bushire and other towns in Persia. 5

For those ports which are connected to the general telegraph and telephone systems *see* the body of this work.

W/T stations.—Coastal W/T stations in the area covered by 10 this volume, which are open for public correspondence, are established at Manāma (Bahrein in List), Bushire, Jāsk and Basra. For details *see* List published by the Bureau of the International Tele-communication Union.

For details of W/T stations which transmit weather bulletins, storm 15 signals, navigational warnings, time signals, etc., *see* Admiralty List of Radio Signals.

PASSAGES.—For information concerning passages to and from the Persian gulf and the Gulf of 'Omān, the mariner is referred to the work entitled " Ocean Passages ", published by the Hydrographic 20 Department of the Admiralty.

In the area covered by this work, steam vessels may steer direct from point to point, but the following information may be useful.

When navigating up or down the gulf vessels should keep along the Persian shore ; when visiting the Arabian shore, vessels should 25 always anchor at dusk, if possible.

The numerous islands and strong tidal streams near the entrance of the gulf, necessitate caution. Strong breezes may set in and sudden shifts of wind may occur with little or no warning.

During a shamāl, especially in summer, and also while the nashi 30 is blowing in the southern part of the gulf in winter, the very hazy state of the atmosphere so completely obscures the land that the surf on the beach may be the first intimation of its proximity.

Chart 10c.

Approaching the gulf.—When bound up the gulf, calling at 35 Muscat, it is usual to make the Arabian coast, which in the fine season is generally visible from a great distance, especially at sunset. The high land between As Sūr and Ras Abu Dāud is first seen, and the Devil's gap may be identified.

During the South-west monsoon, vessels should pass about 3 miles 40 off Ras al Hadd ; the high land will probably not be visible until off As Sūr or Kalhāt, and, owing to the haze, may not be seen at all if far offshore, except about sunset when it often shows up.

Chart 753.

Muscat to the Strait of Hormuz.—From Muscat vessels should 45 steer to pass Ras al Kūh and As Salāma wa Banāt-hā islets at a convenient distance. With a shamāl, to avoid the current and heavier swell on the Arabian coast, it is best to keep over towards the Persian coast, which is fairly steep-to and safe of approach eastward of Ras Jāsk, but it is low, and the hills are a considerable distance inland ; it 50 should, therefore, be given a wide berth at night. From Jāsk, the coast continues low northward to Kūh-i-Hormuz, and the hills in the background render it difficult to judge the distance offshore. Soundings are of little use as a guide.

The tidal streams off the Arabian coast, northward of Jazīrat 55

Chart 753.

Limah, are very strong, especially northward of Jazirat Umm al Faiyārīn, and the depths are too great for anchoring.

Strait of Hormuz to Jazirat Tunb.—From Ras al Kūh to

5 Jazirat Henjām, the tidal streams become strong across the entrance. On passing As Salāma wa Banāt-hā, vessels should guard against the north-going stream.

With winds between west-south-west and south-west, the lee shore must not be closely approached. There is sheltered anchorage northward of Kūh-i-Hormuz, or off Qishm town.

10 The flat off the south-western end of Qishm island requires caution when approaching it; discoloured water marks its edge, and fishing boats often anchor there.

Charts 753, 2830.

15 **Jazirat Tunb to Jazirat Qais.**—Vessels may pass on either side of Coote rock, Jazirat Tunb, and Jazirat Nabiyu Tunb. Jazirat Farūr, which shows well at night unless the weather is hazy, and Jazirat Qais should be passed on their southern sides.

In a shamāl there is less sea near the Persian shore than at a distance 20 off it.

Vessels should guard against a northerly set which is sometimes experienced in the area between Jazirat Tunb and Jazirat Shaikh Shu'aib.

During a shamāl, haziness of the air may render the greatest caution 25 necessary in making or passing any of the islands, sounding affording no guide. Jazirat Farūr is the easiest to see, it being dark coloured, high, and steep-to, with the exception of a small ledge on its western side.

Shelter can be obtained during a kaus either in Chārak or Mughu bays, but it is necessary to anchor well in, where there is shelter in 30 a shamāl, or everything must be ready to proceed to sea at short notice. Between Lingeh and the Bāsidū flat there is not much sea in easterly winds.

Charts 2830, 2837b.

35 **Jazirat Qais to Ras-al-Mutāf.**—Vessels should pass southward of Jazirat Hindarābī and Shaikh Shu'aib, and then south-westward of Ras-al-Mutāf; the mud-coloured water over the shoal extends some miles outside it, and is a good indication of its vicinity by day.

A vessel passing south-westward of Ras-al-Mutāf in thick weather, 40 or at night, should proceed with caution and not approach within depths of 15 fathoms (27^m4).

From Jazirat Qais to Ras-al-Mutāf the smoothest water is inside the islands, and this route can be taken in daylight.

The channel between Jazirat Shaikh Shu'aib and the mainland, 45 where there is anchoring ground, is clear, but neither the sandy shoal off the low eastern point, nor the western end of the island, should be approached closely.

Shelter from the shamāl can be obtained off Chīrū, off the eastern end of Jazirat Shaikh Shu'aib, off Shivūh, and under Ras-al-Mutāf 50 shoal.

Nāband bay affords shelter from a kaus, but, if followed by a shamāl, a heavy sea would set in. Nakhilū bay is the best anchorage in a kaus.

Soundings afford no guide in passing Hindarābī and Shaikh Shu'aib, 55 they being steep-to, nor are they of any assistance outside the bank extending from the southern side of Jazirat Qais.

Chart 2837b.

Ras-al-Mutāf to Bushire.—From a position about 10 miles south-westward of Nakhilū islet (page 147), a vessel should steer to pass about 6 miles south-westward of Ras Halileh (page 151). The coast in the vicinity of Ras al Khān, 15 miles north-north-westward of Nakhilū islet, is very low, but the mountains, about 4 miles inland, extending about 40 miles northward from a position about 9 miles northward of Ras al Khān, are conspicuous. After passing Ras Halileh the vessel should follow the directions given on page 154.

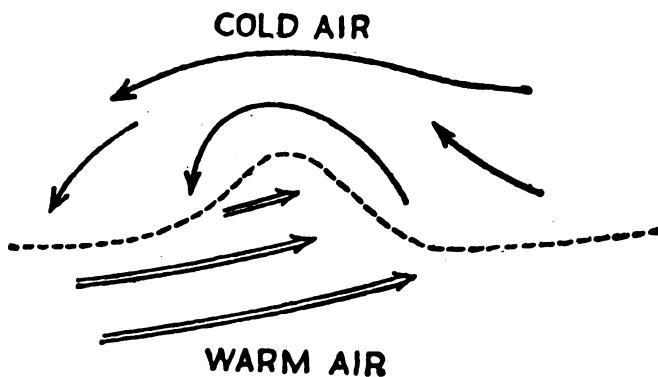
Bushire to Shatt al 'Arab.—A vessel after clearing the shoals 10 off Bushire may steer direct for a position about 3 miles south-eastward of Palinurus shoal (page 234) and thence through Khōr al Amaya to the entrance to Rooka channel.

If, when off the bār, a kaus suddenly sets in, and it should be necessary to anchor, the Maidān 'Ali appears to afford the best anchorage, 15 as it is stated that over this bank the force of the sea is less than in the channels or farther seaward.

METEOROLOGY.—Depressions.—A depression is a region of the atmosphere where pressure is lower than elsewhere. It appears on the synoptic chart as a series of isobars roughly circular or oval in 20 shape, surrounding an area of low pressure. It is characterised by unsettled weather and often strong winds. In the northern hemisphere the winds blow round a low pressure in an anti-clockwise direction; there is also a slight inclination across the isobars. Thus the well-known rule for the northern hemisphere is that when an observer faces 25 the wind the lowest pressure is from 8 to 12 points to his right.

According to the Norwegian theory of depressions, which has now been generally accepted, most depressions form at the boundary of two air currents of different temperatures and characteristics which are in juxtaposition, a tongue of warm air projecting into the cold air 30 and the centre of the depression being at the tip of the tongue of warm air. (Fig. 1.) The disturbance so formed moves forward along the boundary of the two air currents. Thus in its early stages a depression has a warm sector. The boundaries between the warm and cold air streams are known as "fronts." At the front of the warm air stream, 35 known as the "warm front," the warm air is rising gradually over the cold air; this causes condensation of the water vapour in the warm air, forming at first cloud and later drizzle or continuous steady rain. The cloud spreads out ahead of the warm front and the highest cloud, cirrus or mares' tails, is often about 500 miles ahead. At the rear boundary 40 of the warm sector, known as the "cold front," the cold air is pushing under the warm air forcing the latter to ascend rapidly; this process is sometimes violent enough to produce squalls. The rapid ascent of the warm air causes the moisture to condense in the form of cumulonimbus clouds (shower clouds), from which heavy showers may fall 45 (Figs. 2a and 2b). The warm sector is thus being gradually lifted up from the earth's surface. When this has occurred the depression is said to be "occluded," and the warm and cold fronts merge in a "line of occlusion" (Figs. 3a and 3b). When a depression has become occluded, it usually decreases in intensity and rate of travel, and 50 gradually fills up. On the other hand, a depression which has a marked warm sector is likely to be deepening, the winds associated with it may increase in force and its rate of travel may increase. Depressions are usually travelling in a direction approximately parallel to the isobars in the warm sector.

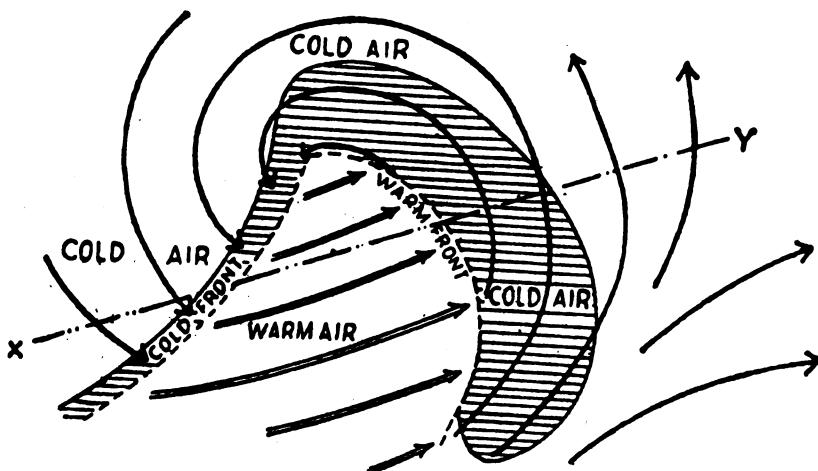
Fig. 1.



A depression forming at the boundary of two air currents.

The double lines show the flow of the warm air, and the single lines the flow of the cold air

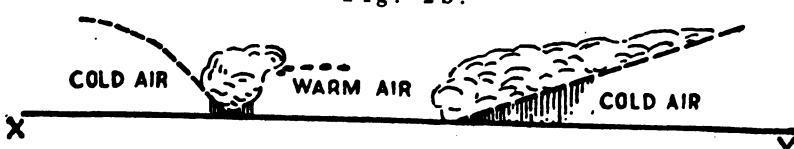
Fig. 2 a.



Plan of a developed depression.

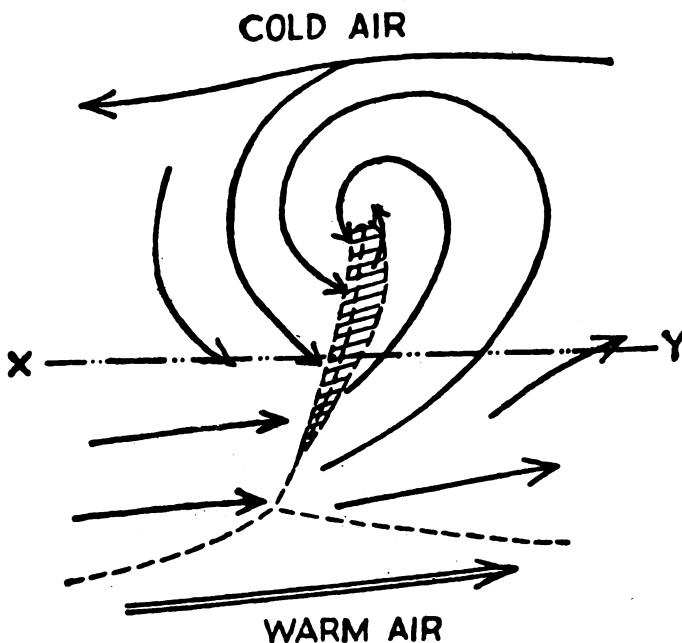
The double lines show the flow of the warm air, and the single lines the flow of the cold air.
The shading shows the area where rain (or snow) may be expected.

Fig. 2.b.



Vertical section of the depression along the line XY.

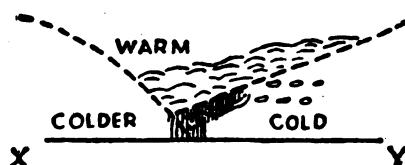
Fig. 3 a.



Plan of an occluded depression.

The shading shows the region where rain (or snow) may be expected near the occlusion.

Fig. 3 b.



Vertical section of an occlusion of the cold front type.

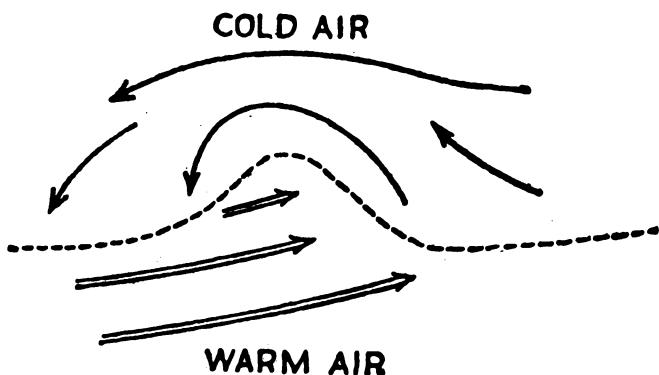
The air in front of the occlusion is warmer than the air behind it.

Depressions may move in almost any direction, but they most often move from any one position to a position further east ; they tend to travel over the sea rather than over the land. Their rate of movement is very variable, and sometimes depressions are stationary for a time ; speeds between 15 and 25 knots are common in the northern hemisphere. Depressions vary very much in size ; the smallest may have a diameter of less than 100 miles, while the diameter of the largest may exceed 2,000 miles.

5

The approach of a depression is indicated by a falling barometer. In the northern hemisphere if the depression is approaching from westward and passing northward of the ship, clouds appear on the western horizon, the wind shifts to south-east or south and freshens,

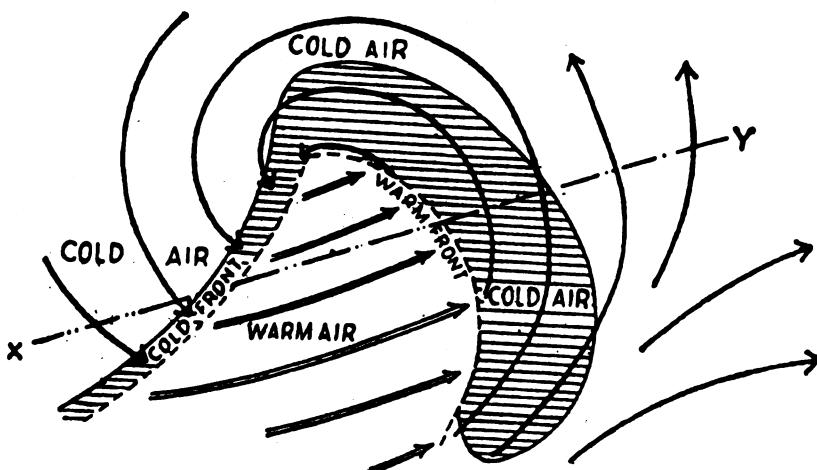
Fig. 1.



A depression forming at the boundary of two air currents.

The double lines show the flow of the warm air, and the single lines the flow of the cold air

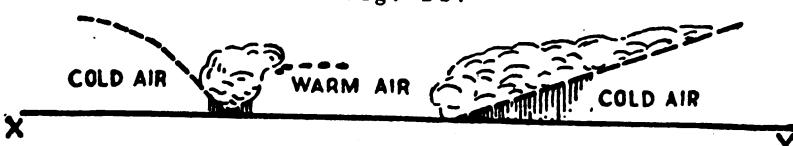
Fig. 2 a.



Plan of a developed depression.

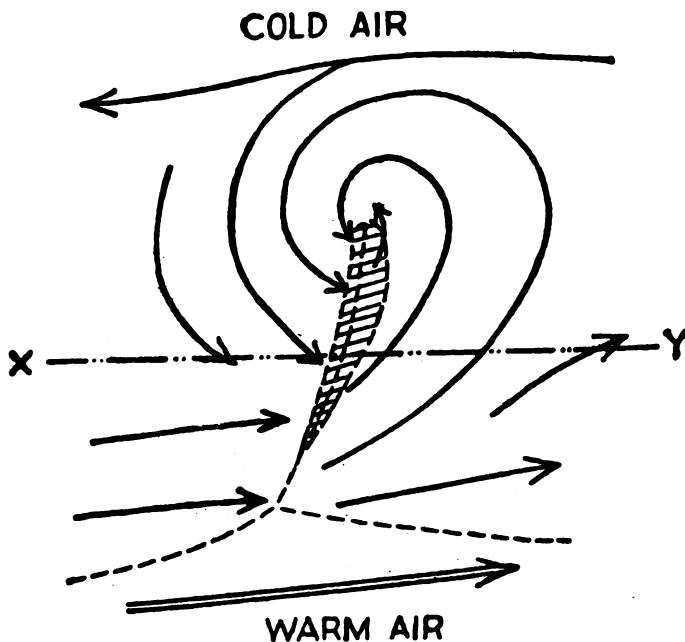
The double lines show the flow of the warm air, and the single lines the flow of the cold air. The shading shows the area where rain (or snow) may be expected.

Fig. 2.b.



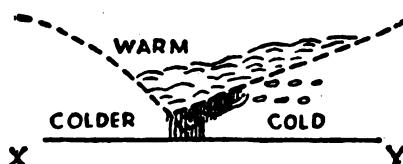
Vertical section of the depression along the line XY.

Fig. 3 a.

*Plan of an occluded depression.*

The shading shows the region where rain (or snow) may be expected near the occlusion.

Fig. 3 b.

*Vertical section of an occlusion of the cold front type.*

The air in front of the occlusion is warmer than the air behind it.

Depressions may move in almost any direction, but they most often move from any one position to a position further east ; they tend to travel over the sea rather than over the land. Their rate of movement is very variable, and sometimes depressions are stationary for a time ; speeds between 15 and 25 knots are common in the northern hemisphere. Depressions vary very much in size ; the smallest may have a diameter of less than 100 miles, while the diameter of the largest may exceed 2,000 miles.

The approach of a depression is indicated by a falling barometer. In the northern hemisphere if the depression is approaching from westward and passing northward of the ship, clouds appear on the western horizon, the wind shifts to south-east or south and freshens,

the cloud layer gradually lowers, and finally drizzle, rain or snow begins. If the depression is not occluded, after a period of continuous rain or snow there is a veer of wind at the warm front, a rise of temperature and diminution of rain (or snow) in the warm sector, the visibility being moderate. The passage of the cold front is marked by the approach from westward of a thick bank of cloud, a further veer of wind to west or north-west, sometimes with a sudden squall, rising pressure, a fall of temperature, squally showers of rain, hail or snow, and improved visibility (except during showers): The squally shower weather with a further veer of wind and drop in temperature may recur while the depression passes. If the depression is occluded, the occlusion is preceded by the cloud of the warm front; there may be a period of continuous rain mainly in front of and at the line of occlusion, or a shorter period of heavy rain mainly behind the occlusion, according as the air in front is colder or warmer than that behind it. There may be a sudden veer of wind at the line of occlusion. Often another depression follows, in which case the barometer begins to fall again and the wind backs towards south-west or south.

If a depression travelling eastward or north-eastward is passing southward of the ship, the winds in front of it are easterly and they back through north-east to north or north-west; changes of direction are not likely to be so sudden as on the southern side of the depression. In the rain area there is often a long period of continuous rain and unpleasant, thick weather with low cloud. In winter in the colder regions the weather is cold and raw and precipitation is often in the form of snow.

Near the region of lowest pressure lulls are sometimes experienced, but sudden changes are likely, and in a deep depression the wind may increase in strength very rapidly, perhaps to gale force as the barometer begins to rise.

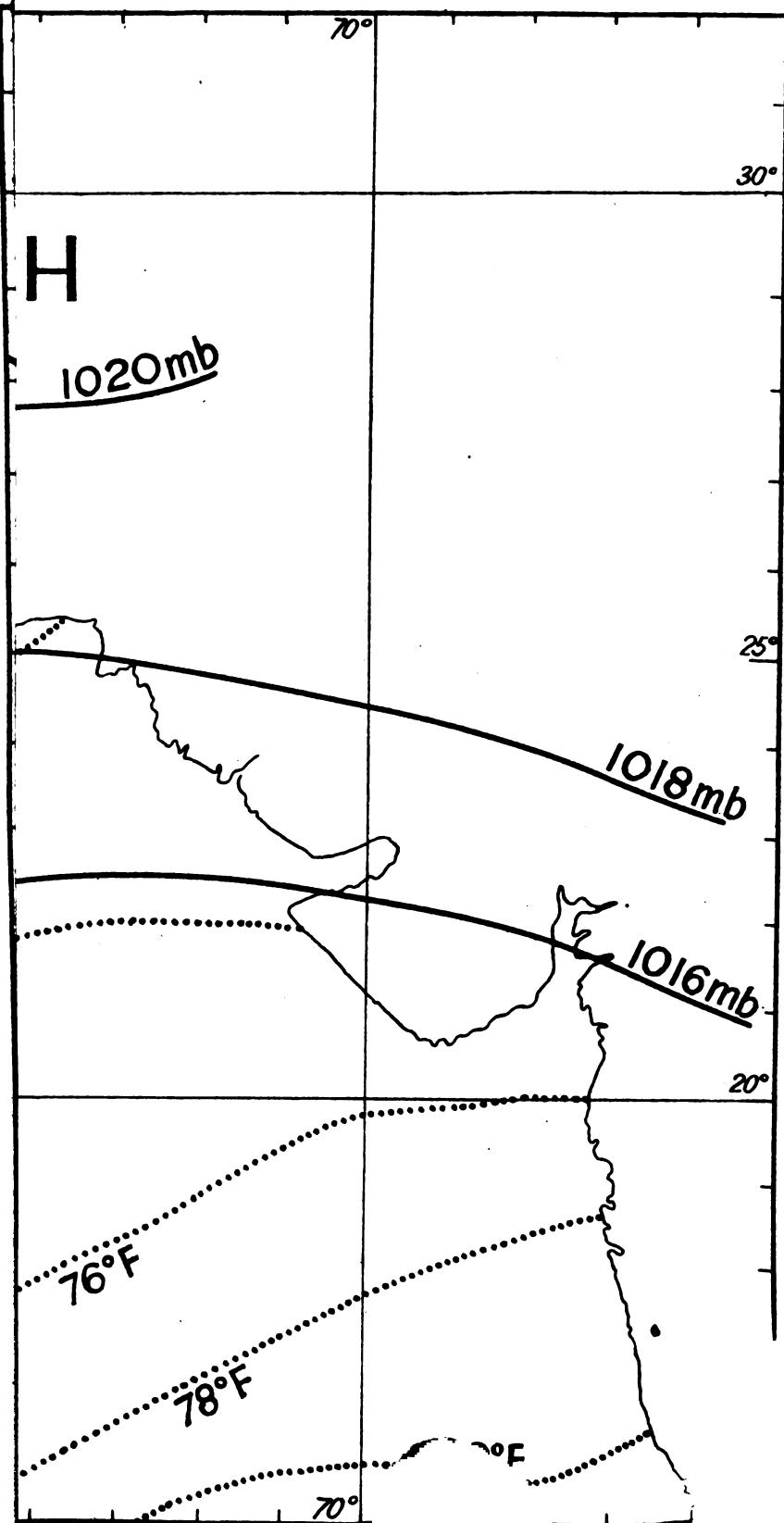
Sometimes in the air circulation of a large depression, usually on the equatorial side and often on a cold front, a secondary depression develops, travelling in the same direction as the primary but usually more rapidly. The secondary often deepens while the original depression decreases in intensity. In the region between the primary and the secondary depressions, the winds are not as a rule strong; but on the farther side of the secondary, usually the southern side, winds are likely to be strong and they may reach gale force. Thus the development of a secondary depression may cause gales at a greater distance from the primary depression than anticipated, while there may be only light winds where gales were expected.

The above is a brief general description of depressions and the associated weather in temperate latitudes of the northern hemisphere. It must be emphasised, however, that individual depressions in different localities differ considerably from one another, according to the characteristics (especially the temperature and humidity) of the air currents of which they are composed, and the nature of the surface over which they are travelling.

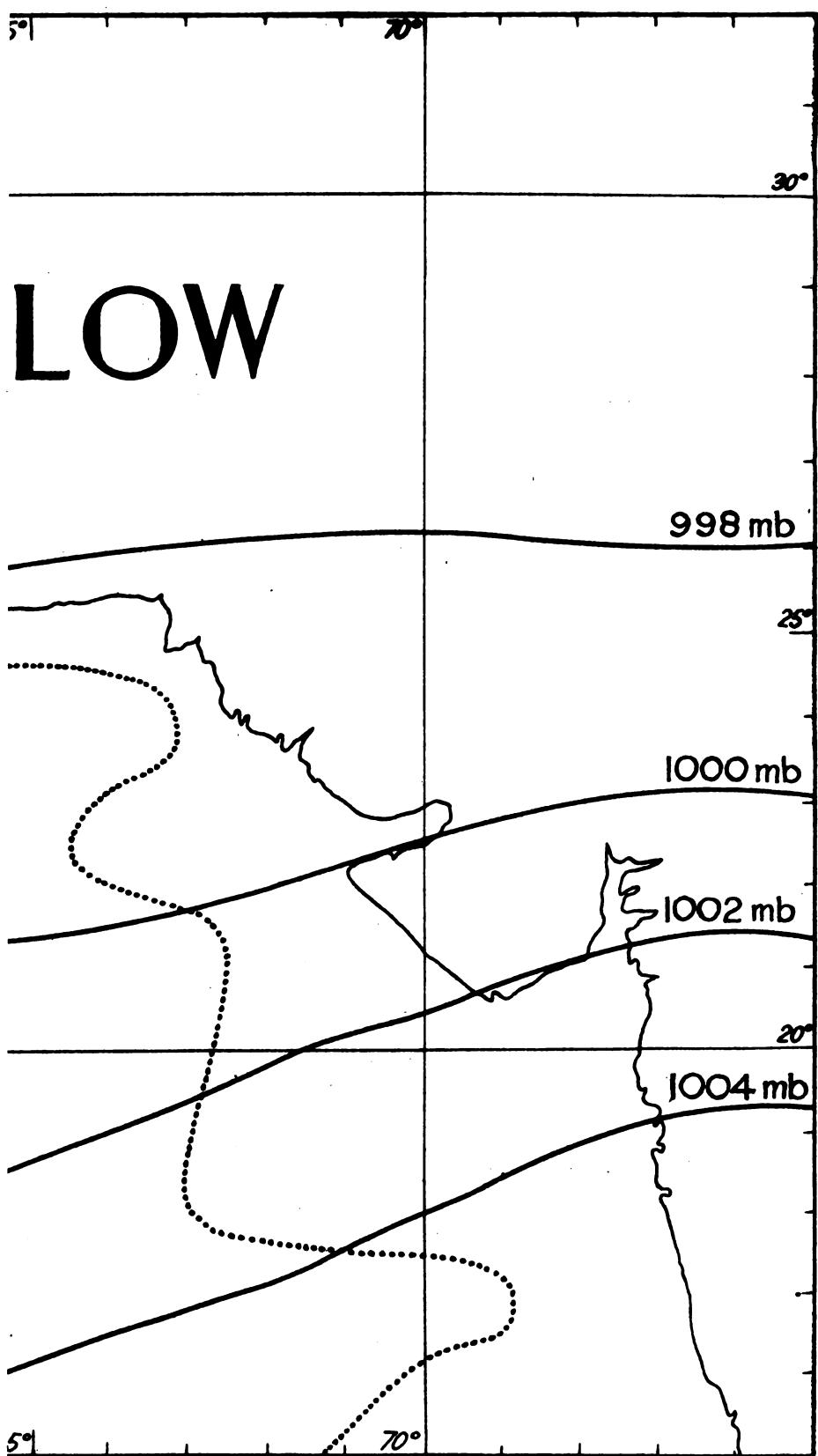
General conditions.—The climate of the region covered by this volume is sub-tropical in character. In the summer months temperatures are exceedingly high, the heat is intense, and little or no rain falls. Conditions may be aggravated by high humidity or a dust-laden atmosphere.

During the winter months the weather is cool and dry except when disturbed by the passage of depressions from the west.

Spring and autumn are transition periods when the weather con-



LOW



ditions are changing from winter to summer and summer to winter types, respectively.

The winds over the Persian gulf are north-westerly for the greater part of the year. In the Gulf of 'Omān and on the Makrān coast, however, there is a seasonal change in wind direction from northerly winds in winter to southerly winds in summer ; a reversal effected by the setting in of the South-west monsoon over the northern part of the Arabian sea. 5

Disturbed weather occurs in winter with depressions approaching from west. In the other seasons depressions or cyclones approaching 10 from east occasionally affect the weather of the eastern part of the region.

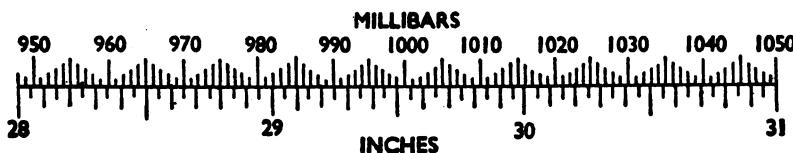
Pressure.—In winter, from October to March, pressure is high to the north over Asia and is lower to the south over the Arabian sea. In general, average pressure increases northward, but extensions of 15 the continental high pressure lie over Arabia and India and introduce local irregularities. In summer a region of low pressure lies over the Persian gulf and the north-western part of India, the average pressure reaching its lowest value in July (see tables on pages 38-44). Over the area covered by this volume average pressure falls gradually from 20 January to July and rises gradually from July to January. Charts of the average pressure for January and July are shown in Figs. 1 and 2, facing page 22 and this page.

The diurnal variation is regular. Pressure is highest about 1000 and 2200 local time and lowest about 0400 and 1600. The range is 25 between 2 and 3 mb. Occasionally during the winter, the evening maximum and the early morning minimum are absent or very slight.

The barometer may give no warning of bad weather in the Persian gulf ; bad weather sometimes occurs without any change whatsoever, 30 or the change does not take place until the gale or squall has set in.

On the Makrān coast, the barometer is usually a good guide for the weather ; its range, though small, is greater than in the tropics, and as a rule it falls before bad weather. Occasional squalls, however, often occur without barometric warning. 35

The following diagram gives the value in millibars of inches of mercury and vice-versa :—



Cyclonic disturbancies.—Western depressions.—During the months from October to March, disturbances cross the Persian gulf and the northern part of the Arabian sea from west ; they are known by the 40 India Meteorological Department as " Western disturbances." Most of them have their origin in the Mediterranean and travel eastward through the northern part of Arabia and Iraq, but in mid-winter a few may develop in the interior of Arabia. The average number crossing the Persian gulf is 5 or 6 a month except in February when 45 the average is 8. Occasionally one of these depressions may affect the region as early as October or as late as April or May. Western

depressions do not appear so far south in summer, but the effects of one passing northward may sometimes be felt.

The passage of such a depression over the Persian gulf is accompanied by much the same weather as in higher latitudes (*see* page 19), but

- 6* it is likely to be of less intensity. At the approach of one, the prevailing dry cool north-westerly winds over the upper part of the gulf are replaced by moist southerly winds (from directions between south-east and south-south-west) which may be accompanied by drizzle or fog. After the passage of the warm front there is usually fair weather away
- 10* from the coast, but on the hilly Persian coast, cloud and rain persist for a longer time. As the depression moves eastward, the cool north-westerly winds set in again behind the cold front ; there may be squalls of gale force, thunderstorms and sand storms, cloud but not always rain. At Shaibah, situated about 8 miles south-westward of Basra,
- 15* it is said that only about one cold front in 3 is accompanied by rain.

The indication from clouds of the approach of north-westerly winds of the cold front, though satisfactory over land stations, generally, is not very satisfactory at sea, where there is usually not much cloud before the appearance of a squally north-westerly wind.

- 20* The interval between the arrival of the warm and cold fronts is from 12 to 36 hours ; it is usually longer in the Persian gulf than further eastward. The cold front usually lies in a north-easterly and south-westerly direction ; its rate of advance varies, but, on the average, it travels from Bushire to Jāsk in about 36 hours. Over the
- 25* sea the strong north-westerly winds produce a swell which may give a warning of the approach of the cold front. On very rare occasions the cold front lies in a north-westerly and south-easterly direction, so that the weather associated with it appears over the whole region within from 12 to 24 hours. More cold fronts than warm fronts affect
- 30* the region.

Eastward of the Persian gulf western depressions decrease in intensity, though they may sometimes regain vigour when they reach the western frontier of India. Off the Makrān coast and over the northern part of the Arabian sea the passage of a western depression may give

- 35* rise to local gales and squally weather.

Cyclones and Eastern depressions.—In the seasons before and after the monsoon, tropical cyclones originating in the Arabian sea may, on rare occasions, influence the weather of the Gulf of 'Omān, and even more rarely that of the Persian gulf. In the last eighty years

- 40* only 17 such storms are known to have affected the area between Karachi and the Gulf of 'Omān. Of these one was in April, four in May, nine in June, two in September and one in November. They gave rise to gales or strong winds, rain, squally weather, and a heavy sea and swell along the Makrān coast and in the Gulf of 'Omān. On
- 45* one or two occasions, storms have travelled into the Gulf of 'Omān as severe tropical cyclones.

From June to September, depressions, which do not as a rule reach the intensity of a tropical cyclone, form in the Arabian sea and in the Bay of Bengal, accompanying the revival of the monsoon after a period

- 50* of temporary inactivity. Sometimes these depressions, after travelling north-north-west along the coast of Bombay, move in a westerly direction to the extreme north of the Arabian sea and enter Persia or Baluchistān. It is said that marked cyclonic circulation of the winds, squally and overcast weather, occasional light passing showers, dust-
- 55* storms, rough seas and heavy swell over the section between Pasni and Karachi often follow the passage of these depressions into Persia.

Thunderstorms are known to occur over the hills of 'Omān. In the Persian gulf these depressions are unlikely to cause rain.

Winds.—From December to February air flows outward from the high pressure area over Asia. The direction of flow is, however, influenced by the contours of the land causing north-westerly winds over the Persian gulf. Winds gradually assume a more northerly direction along the Makrān coast, finally becoming north-easterly in the region of Karachi. In the southern sections of the Persian gulf and the Gulf of 'Omān along the Arabian coast, the prevailing wind is more westerly in direction and on the western side of the Strait of Hormuz even south-westerly. 5 10

These normal winter conditions are frequently disturbed by the passage of western depressions which give rise to south-easterly winds in advance of their centre and to south-westerly and north-westerly winds in their rear. Thus, during the winter months, an alternation 15 between south-easterly and north-westerly winds is the characteristic feature.

In general, the average force of the wind is between 2 and 3 except in the northern part of the Persian gulf, where the average force is between 3 and 4. 20

March, April and May show a gradual change to summer conditions. South-easterly winds associated with western depressions decrease rapidly in frequency and by May practically disappear.

In summer, from June to September, the great low-pressure system, which extends from the north-western part of India, through Persia, 25 to Arabia, gives a fairly steep gradient for north-westerly winds over the Persian gulf. Over the Gulf of 'Omān winds are more variable; they blow mainly from south-east and are apparently a deflection from the Arabian sea or part of the main wind current of the South-west monsoon. Over the northern part of the Arabian sea east of longitude 30 63° E., the monsoon preserves its direction and reaches the Makrān coast as a south-west wind.

Winds are mainly light in the southern part of the Persian gulf and in the Gulf of 'Omān, and light or moderate in the northern parts of the Persian gulf and Arabian sea. Any deepening of low pressure over 35 Persia causes a gradual strengthening, occasionally to gale force, with a subsequent gradual falling off to a light wind when the low pressure weakens. There is a decrease in the average wind speed after July.

From the middle of September to November is a transition period 40 between summer and winter. Over the Persian gulf north-westerly winds become less steady and south-easterly winds associated with western depressions begin to make their appearance as the season advances. The average force of the wind is between 2 and 3. Over the Gulf of 'Omān and the northern part of the Arabian sea, the monsoon ends at the beginning of September and the frequency of northerly winds begins to increase. The average force of the wind is between one and 2. 45

Shamāl.—In the Persian gulf, the Gulf of 'Omān and along the Makrān coast the name "shamāl" is given to any form of north-westerly wind, whether it is the normal prevailing wind or a wind of gale force associated with western depressions. 50

In the Persian gulf the direction of the shamāl varies from place to place according to the trend of the coast. Therefore, although the average direction is north-west, the name may be applied to winds 55 whose direction, locally, is west or south-west.

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In the Persian gulf the direction of the shamāl varies from place to place according to the trend of the coast. Therefore, although the average direction is north-west, the name may be applied to winds whose direction, locally, is west or south-west. 55

Nashi.—*Nashi* is the Arabic name for north-east winds. These winds occur in the winter on the Persian side of the Persian gulf, especially near its entrance and also on the Makrān coast. They are probably associated with an outflow from the central Asiatic anti-⁵ cyclone which extends over the high land of Persia, and appear to be similar in character to the bora of the Mediterranean but are not so severe.

The *nashi* is gusty with frequent lulls. It often persists for about 3 to 5 days but frequently lasts only one day; if it lasts for 3 days, ¹⁰ it is stated that it will be strongest on the third day. The barometer is usually high during a *nashi*, but sometimes falls a little when the wind ceases.

These north-easterly winds sometimes become more intense over lower Persia during the approach of a western depression and produce ¹⁵ secondary local disturbances with the oncoming south-easterlies of the depression. In these circumstances, they are accompanied by cloudy weather, and, as a rule, also by rain, especially over the hilly regions. For example, north-easterly winds with cloud and rain may occur in the region between Henjam and Lingeh, when a western ²⁰ depression is approaching Bushire.

Gales.—Observations taken at sea over a long period show that over the Persian gulf and the Gulf of 'Omān winds of force 8 or more lasting for several hours are comparatively rare. The available observations from ships show that the only months when the odds against encounter-²⁵ ing a gale (force 8 or above) are 100 to 1 or less are as follows:—

Odds against encountering a gale (Force 8 and above)

Persian gulf. (Lat. 25°–30° N., Long. 50°–55° E.)	January.	March.	July.	December.
	65	—	100	60
Gulf of 'Omān. (Lat. 20°–25° N., Long. 65°–70° E.)	.	—	75	—

Gales of force 7 are considerably more frequent. Observations over a comparatively short period seem to show that the odds against encountering a wind of force 7 or over are only about 10 to 1 in parts of the southern half of the Persian gulf between January and March, ³⁰ also in the Strait of Hormuz in December and off Muscat in February.

In winter, gales are associated almost entirely with the passage of western depressions. The wind may rise to gale force both during the southerly winds of the warm sector or with the north-westerly winds in the rear of the depression. In the former case the wind is stated to ³⁵ increase gradually in strength to gale force, whereas, the north-westerly gales may set in suddenly with the passage of the cold front, and are equally.

In summer, gales of force 8 are rare. Force 7 may be reached occasionally by the shamāl, but the odds against encountering a wind ⁴⁰ of force 7 or over are not likely to be less than 30 to 1.

In the transition seasons of spring and autumn, gales are not frequent in the Persian gulf, though a shamāl may occasionally reach gale force. In the Gulf of 'Omān, gales have been recorded on a few rare occasions when tropical cyclones from the Arabian sea travel northward to the ⁴⁵ gulf; it is stated that in some cases, the wind has blown with hurricane force.

Off the coast of Makrān gales are again infrequent. They have been

recorded in observations from ships only in December, January and March, and, even in these months, the odds against encountering a gale are between 100 and 250 to 1. At times, however, the wind may reach gale force during the squally weather of the South-west monsoon in association with eastern depressions.

Land and sea breezes.—Off the coasts the wind may be influenced by land and sea breezes, so that the actual wind experienced may not be that which would be expected from the existing general pressure gradient. These breezes are most strongly developed during periods of settled weather and in seasons when the prevailing winds are light.

The direction of the land and sea breezes at any place depends on the trend of the coast. The effect of the breezes may be to deviate the wind due to the general pressure gradient, to reinforce it, or even to reverse it.

In general, the land breeze is experienced only close inshore ; it does not, as a rule, extend more than 10 miles seaward and sometimes considerably less. During fine settled weather, the wind usually falls calm about sunset and the land breeze sets in about midnight and dies away at sunrise. The land breeze is usually most pronounced in the cool season from October to March and in places where the land rises steeply from the sea.

Further information about land and sea breezes is given on page 28.

Sea temperature.—Sea surface isotherms for February and August are shown in Figs. 1 and 2 facing pages 22 and 23.

Lowest values of sea temperature occur in February throughout the area. In the Persian gulf, the coldest section (64°) occurs in the west. The water becomes warmer eastward (70° at the entrance to the Strait of Hormuz).

In summer, the month of the highest average sea temperature varies. In the northern part of the Arabian sea, it is as early as June (84°) ; in the Gulf of 'Omān it is July (87°). The South-west monsoon arrests the continued rise of sea temperature in the summer.

In the Persian gulf, the highest average temperature is reached in August, in all parts it is rather more than 90° . In summer, conditions on board may be very trying owing to this excessively high sea temperature, which in August and September has been known to exceed 98° , and, except at the head of the gulf, is seldom below 90° .

Waterspouts.—Waterspouts at sea are frequent in the gulfs and along the coast of Makrān.

COAST OF MAKRĀN.—The coast of Makrān, between the western frontier of British India and Gwādar, comes under the influence of the South-west monsoon, and is characterised by more disturbed weather in summer than in winter. Western depressions are experienced in the latter season but their effect on the weather along this coast is generally slight.

During the months from April to November, tropical depressions and cyclones may occasionally affect this area ; but severe storms are very infrequent. (See page 24.)

Local winds.—North-east monsoon period.—From December to March, the prevailing winds are from the land ; north-westerly at Gwādar and Pasnī, north-easterly at Ormāra. They are normally light, but may blow strongly at intervals. Towards the end of the period, in March, winds become more westerly along the coast generally.

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During December and January, strong north-easterly winds may be experienced, often accompanied by gloomy, squally weather. Western depressions may give rise to local storms and squalls.

In January or February, especially, a very strong shamāl may blow home to Karachi, and along the coast southward to Bombay; it is reported that there is usually only one such shamāl annually, and it lasts two or three days, raising a heavy sea. These winds are accompanied by a thick haze caused by fine dust, probably from the plains of 'Iraq.

10 In general, squally weather with winds reaching or exceeding force 6 may be expected on the coasts on from one to 3 days a month during this season. The squalls mostly blow from directions between north-west and north-east.

Land and sea breezes are prevalent in undisturbed weather. The 15 land breeze sets in at midnight or some hours later from between north-north-east and east-north-east, veering gradually eastward; before noon a calm usually occurs followed by a light south-easterly wind which veers to south-west in the afternoon. The land breezes are sometimes fresh or strong in December and January; after 20 January they weaken, and become uncertain towards the end of this period. The sea breezes are light in December and January but they increase in strength as the season advances.

Transition period (Spring).—April and May are months with moderate to strong westerly and south-westerly winds along the 25 eastern end of the Makrān coast. Between Gwādar and Pasni, winds are from directions between south-west and north-west. In April it is stated that the land breeze is sometimes felt as a hot gusty wind. May is the month with most wind.

South-west monsoon period.—From June to September is the period 30 of the South-west monsoon. On the eastern part of the coast of Makrān the monsoon winds are from west to south-west, they do not become fully established until July when they blow with moderate strength, bringing humid cloudy weather.

The South-west monsoon usually sets in at Karachi with an eastern 35 depression, with a few days', or even a fortnight's hard blow from between south-west and west-south-west, accompanied by cloudy weather and scud flying overhead. It is preceded by a falling barometer, and is accompanied or preceded by a heavy swell from the same quarter.

40 After the first blow, it moderates, and strong to light breezes prevail until the end of August, or sometimes the middle of September, the wind at night veering westward several points. The swell continues, and varies from a high to a long low swell, according to the weather.

45 In the region of Gwādar, the monsoon is deflected; the prevailing wind is south-easterly and less strong.

Land and sea breezes are not likely to be experienced during these months when the wind blows steadily from the sea.

Transition period (Autumn).—October to November is the transition 50 period after the cessation of the South-west monsoon in September. Winds are light and variable and land and sea breezes prevail. The land breeze is sometimes fresh or strong in November; the sea breeze is light.

Air temperature and humidity.—In the cool season, from December 55 to March, the lowest average temperature, 65° , occurs in January. On the average, the temperature falls at night to about 56° , and

rises by day to 70° - 75° . Generally frost is almost unknown, but a minimum of 31° has been recorded at Pasni in February.

Towards the end of March and in April the temperature rises rapidly until May. May and June are the hottest months of the year with a mean temperature of 86° . The highest recorded temperature of 117° occurred at Ormāra in May, whilst at Pasni 115° has been recorded in June. Along the eastern portion of the coast, night temperatures do not fall below 70° . Nights are cooler in the Pasni region where the temperature has been known to fall as low as 56° in May and 61° in June.

Temperature remains high until September; in July it rises by day to 90° and falls at night to about 80° . In August there is a slight fall in the daily maximum temperature, but in September and October there is a rise, probably due to the disappearance of cloud with the cessation of the South-west monsoon. The temperature at night continues to fall during these months.

November is definitely cooler; but temperatures between 95° and 100° have been recorded by day.

Relative humidity is lowest in winter, January having an average of from about 60 to 65 per cent; it decreases eastward. The humidity is highest during the South-west monsoon when it averages from 75 to 80 per cent, and, combined with the high temperatures, renders the weather very oppressive.

The combined effect of high temperature and humidity is indicated by the "wet-bulb temperature." It is considered that when this temperature exceeds 78° , hard physical work is impracticable. Along this coast (as represented by Karachi, Ormāra and Pasni) the average wet-bulb temperature exceeds this value in May, June and July.

Cloud.—From October to May there is little cloud on the average, the mean amount being from about 2 to 3 tenths. Such cloud as there is, is usually associated with western depressions. Gwādar averages from 3 to 4 tenths in January and February; this is the greatest amount of cloud observed in this region. Two days in from 3 to 5 are cloudless.

From June to September, the monsoon season, the amount of cloud is high compared with other months; the averages are from 4 to 5 tenths in June, from 7 to 8 tenths in August and from 5 to 6 tenths in September. Completely cloudless skies are infrequent in July and August. In June convection cloud may appear during the afternoon but generally there is more cloud in the morning than in the afternoon.

Rain.—The coast of Makrān may be regarded almost as a desert in respect of its rainfall, which is uncertain and scanty. For two or three consecutive years there may be less than 3 in. of rain in the year. At Pasni and Ormāra the average fall is about 6 in. Any month may be rainless; from April to June and in September and October rain rarely falls.

Every now and then a large fall occurs during the year; when that is so, the rain usually falls in such heavy downpours as to be hardly less destructive to cultivation than the long droughts; the rivers or watercourses at such times discharge an immense volume of water.

Some rainfall may be associated with western depressions.

In the extreme east, in the region of Ormāra, the monsoon brings a small amount of rain for about 2 days in July. It is said that lightning in the north-east is a good indication of rain at this season.

Dew is heavy from March to September, and occasionally during the winter.

Visibility.—The main causes of bad visibility on the coast of Makrān are fog and dust in the early morning.

5 Fog may occur once or twice in January, and two or three times in February and March. Early morning fog in March usually lasts from an hour before to an hour after sunrise. Towards the end of the month moderately strong winds begin to raise dust during the daytime. Severe duststorms may occur near the cold front of a 10 western depression.

In April and May dust haze increases, and visibility over the land is only fair to good. In May there are 3 or 4 duststorms a month and the resultant dust haze, which may persist some days after the storm has subsided, may reduce visibility on from 6 to 10 days.

15 Dust haze continues through June but visibility improves in July, although misty and hazy conditions may prevail in the early mornings.

In August and September visibility is generally good. Morning fog for a short period may occur on from one to 3 days in September.

20 In October and November visibility is almost always good, except in the early morning or late evening, when haze over the sea may be present.

The following table gives the average number of days with dust haze throughout the year.

Average number of days with dust haze.

Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
4	6	8	9	12	16	22	16	9	8	7	5	122

25 **GULF OF 'OMĀN.**—This section covers the shores of the Gulf of 'Omān from Muscat to Ras Masandam on the Arabian side, and on the Persian side from Bandar Abbās to the frontier of Baluchistān.

Local winds.—*November to March.*—On the Arabian shore the prevailing wind is from north-west. Calms are frequent and are 30 recorded on from 44 to 69 per cent. of the morning observations at Muscat.

On the Persian shore of the gulf, the wind in the early morning is nearly always from the land, generally from directions between north-west and north-east. North-easterly winds (*nashi*) are often 35 strong and may reach force 7. They may continue for 2 or 3 days with lulls in the afternoon and be accompanied by clouds of dust and gloomy, squally weather. Usually a light sea breeze springs up in the afternoon from between south and west.

During this season, especially between December and February, 40 the Gulf of 'Omān is affected by western depressions; sometimes a secondary to one of these depressions forms in the neighbourhood of the Strait of Hormuz and moves along the line of the highland of Persia, giving rise to disturbed weather with squally winds along the Persian shore.

45 Strong and squally winds from north-west raise short steep seas which sweep into Muscat harbour and render untenable other anchorages on the Arabian shore.

These north-easterly winds may sometimes blow hard over the gulf; they are dreaded by local seamen, as the Bātina shore is to 50 leeward and affords no shelter.

It is stated that, during the cool season, steady breezes are almost unknown in the gulf, and there is either too much wind or none at all.

April and May.—On the Arabian shore in the vicinity of Muscat, the prevailing wind continues to blow from north-west during May, but there is a slight increase in easterly winds after the onset of the South-west monsoon, which usually takes place during this month over the western part of the northern part of the Arabian sea. 5

On the Persian shore the offshore northerly winds rapidly decrease in frequency in April; by May they are of rare occurrence even in 10 the early morning. Slight or moderate sea breezes from south-west set in during the day and veer to west-north-west or north-west at night.

From June to September.—The South-west monsoon is not felt as a south-west wind westward of Ras al Hadd. Eastward of a line 15 joining Ras al Hadd and Ras Jāsk it blows from the south-east. Westward of this line winds are more variable, and although south-easterly winds penetrate further into the gulf as the South-west monsoon reaches its greatest development, the influence of the monsoon is not felt westward of the line joining Bandar 'Abbās and the northern 20 extremity of the Masandam peninsula, except occasionally as a slight swell. At times very hot, dry north-westerly winds, lasting not more than a day, have been experienced in the gulf at this season. The sea is usually smooth, with a slight swell in the eastern part.

On both the Arabian and Persian shores north-westerly winds are 25 still frequent in June, but they are infrequent in July and August. On the Arabian shore winds are mainly easterly and light; they back towards north-east in the afternoon under the influence of the sea breeze. On the Persian shore winds are easterly in the morning: they veer during the day and by evening blow from some direction 30 between south-east and south-west.

In June before the monsoon has become fully established tropical cyclones have occasionally reached the gulf from the Arabian sea (*see p. 24*).

October.—After the cessation of the monsoon over the Arabian sea 35 in September, the frequency of south-easterly winds decreases and that of north-westerly winds increases. On the coasts, the winds are for the most part light and variable with frequent early morning calms. On the Persian shore northerly and north-easterly winds from the land increase in frequency by November in the mornings, but 40 south-westerly sea breezes usually develop in the afternoons.

Air temperature and humidity.—The values given in the tables for Muscat and Jāsk (*see pages 38 and 41*, respectively) should be fairly representative of the Persian and Arabian shores, respectively. January is the coolest month. At Chāhbār, day maxima average 74° 45 and night minima about 58° . Day temperatures at Muscat are similar, but the night temperatures average 66° .

Summer heat is greatest in June, when Muscat is probably one of the hottest harbours in the world. The sun is overhead at noon and reflected heat is received from the surrounding barren and rocky 50 hills; whilst hot winds from the desert may blow at night. From day maxima, averaging 98° , the temperature falls at night to 88° . On the northern shore of the gulf the heat is slightly less intense during the day and at night the temperature falls to 83° .

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Relative humidity is highest from June or July to August or 55 September when the heat is very oppressive. In general the average

wet-bulb temperature exceeds 78° from June to September (*see note on high temperature and humidity on page 29*).

Cloud.—Cloud amount is very small in this region. The average for the year is 2 tenths. The maximum values, just over 3 tenths, occur in July and August and from December to February. In May and October averages are less than one tenth. On the Persian shore, cloudiness appears to increase rapidly between Chāhbār and Gwādar, especially during the South-west monsoon; at the former the mean annual cloud amount is 2 tenths, whilst at the latter it is over 4 tenths.

10 In most areas on the coast there is less cloud in the afternoon than in the morning during the months from June to September; in the other seasons there appears to be no regular diurnal variation.

During most of the year overcast skies are rare; in December and January, however, they have been recorded in from 10 to 20 per cent. of the observations on the Persian shore, but less frequently on the Arabian shore.

Ships' observations indicate that the amount of cloud is slightly less over the sea than over the land at all seasons.

Rainfall.—Rainfall is slight on both shores of the Gulf of 'Omān.

20 The average for the year is just over 4 in. Rain is practically confined to the winter months, from November to April, when it occurs on from one to 2 days a month almost always in association with western depressions. It is stated that at Muscat rainfall often occurs after it would normally be expected from the position of the cold front; the delay which in some cases is as much as 24 hours, is probably due to the fact that Muscat is situated on the lee side of the hills.

During the remainder of the year the region may be completely rainless, though occasional thunderstorm rain may occur.

30 **Visibility.**—Poor visibility is caused either by short-lived early morning fog or mist, or by duststorms or dust haze. During a period of from 2 to 3 years dust haze, which reduced visibility to one mile or less, was observed at Muscat on 5 days in June and 4 days in July, during the other months it was observed on one or 2 days. Similar conditions prevail on the northern shore of the gulf, the worst months, May, June and July, each having from about 3 to 5 days with dust haze.

Fog or mist was recorded on these shores during the above short period on about 10 days a year, without any marked seasonal variation.

40 The data on pages 38 and 41 for Muscat and Jāsk, respectively, give the average number of occasions that poor visibility, less than 2 miles, was recorded at 0800.

Thick fog has been reported in the gulf on from 2 to 4 mornings in March.

PERSIAN GULF.—Local winds.—*Winter season.*—From October to March winds tend to blow from the land towards the sea except in the afternoon when they are deviated by the sea breeze. Thus at Bushire, the wind in the morning is from between north and east, whilst in the afternoon it is from north-west or west. At Henjām winds are from between north-east and east in the early morning and from south-west in the afternoon.

On the Arabian shore there is often a land breeze in the early morning, but it does not extend far from the coast. At Kuwait, in fine weather, there is generally a light land breeze in the morning and

an easterly to south-easterly sea breeze in the afternoon. Near Bahrein the wind in the morning is from between west and north-west, and is from between north-west and north in the afternoon. At Shārja, winds are from between south and south-east in the morning and blow from west or north-west in the afternoon.

5

These conditions are frequently disturbed by the passage of western depressions (see page 23). Kaus (Arabic) or sharki (Persian) are the local names for the damp south-easterly winds which most often occur in advance of these depressions. They gradually strengthen and are strongest towards the end of their existence. They may occasionally reach force 7 or even force 8 after blowing moderate to fresh for about 12 hours. Wet and cloudy weather may last for some time, but the wind seldom persists for more than 3 days.

It should be borne in mind that a vessel that has sheltered from the kaus in an anchorage open to the shamāl should weigh immediately 15 the kaus is over or she may have to ride out a shamāl on a lee shore.

Occasionally a kaus may be followed by a south-westerly wind, known to the Arabs as " suhaili ". This wind generally lasts only a few hours and may be accompanied by thunderstorms and rain. 20 It is much feared by the natives as it blows into nearly all the otherwise sheltered anchorages off the Persian shore.

Transition period (Spring).—April is a month of transition, and summer conditions begin in May. It is stated that sea breezes are at their strongest during these months.

25

At Bāsidū, land breezes are strong and last until 1000 ; sea breezes are also regular, but do not set in so early as at Bushire.

On the Arabian shore, the land breezes are often strong in the morning, and occasionally blow in hot gusts. At Kuwait, the sea breezes are regular in fine weather.

30

Summer season.—From June to September the north-westerly wind or shamāl extends over the whole region with rare interruptions. It reaches its greatest steadiness at about mid-summer during the so-called forty-day shamāl from June 6th to July 16th, the period known as the " Bārih al Jauzah " or " Bārih al Kabir ." The summer shamāl 35 varies in force ; it may become strong and may perhaps blow with force 7 for three or more days, being strongest about the middle of this period. It is stated to lull for a short time about daylight.

In most cases, it is advisable for a steam vessel of low power to obtain anchorage, if possible, during the strength of a shamāl, as 40 little or no headway will be made against it ; the Persian shore and the islands off it offer many suitable shelters.

At the south-eastern end of the gulf the shamāl blows from between west and south-west. Thus at Lingēh the prevailing winds are from west ; at Henjām they are chiefly from south-west. There is an 45 increase of easterly winds in the region of the Strait of Hormuz in the latter half of the summer.

Land and sea breezes do not develop at this season unless the shamāl is particularly weak. At Bushire, when there is no shamāl, the sea breeze may be felt as early as 0900 local time ; it usually attains its 50 greatest strength between 1500 and 1700 and does much to mitigate the excessive heat of the afternoon. The land breezes are very light and of short duration.

Transition period (Autumn).—Towards the end of September, north-westerly winds become less persistent. Land and sea breezes become 55 well-marked as the winter approaches.

Squalls.—Squalls are a characteristic feature of the weather of the Persian gulf, and are the most serious menace to navigation that is likely to be experienced. They have been recorded in all seasons of the year. Besides the line squalls associated with the arrival of the cold front of a western depression (see page 23), squalls occur at other seasons of the year. In spring northerly or westerly squalls, accompanied by dust, may be associated with thunderstorms in the evening. Such squalls have been recorded at Basra and at the head of the gulf, at Kuwait, and in Bāṣidū road.

10 In summer, squalls may be of frequent occurrence in association with duststorms. Information with regard to the frequency of strong winds on the coasts, available for from 2 to 3 years only, shows that at Bahrein 13 days with winds of force 6 or more may be expected in June and 12 days in July, and at Bushire 9 and 7 days, respectively.

15 Very severe squalls, known locally by the Arabs as "Uhaimir", may be experienced in October and November. It does not appear that these squalls blow from any special direction. The air is said to be very clear before their arrival. According to the Arabs they are experienced between October 14th and November 23rd, during

20 which time no native vessels put to sea until a squall is over. If they do not occur before November 23rd, the Arabs consider that there will be none until the ordinary bad winter weather sets in. An unusual degree of electrical action is noticed, and St. Elmo's fire has been observed on board ship at this season.

25 In Bāṣidū road, very violent squalls are experienced from northward in May, and from south-eastward in July, but these are not of frequent occurrence. Very heavy squalls are experienced from northward in May near the head of the gulf.

Alternating winds.—A succession of squalls from opposite quarters, each lasting only a few minutes, and alternating thus several times, is occasionally experienced.

Air temperature and humidity.—January and February are the coolest months. The northern shore of the gulf is cooler than the Arabian shore, as will be seen from the tables for Bahrein, Bushire and Basra on pages 42, 43, and 44. Temperatures are not quite so low at the eastern end of the gulf, where, at Henjām and Shārja, the daily maxima are just over 70° and minima 55 to 60°. High temperatures of over 80° have, however, been experienced in all parts. Temperatures rarely fall below 40° except at the head of the gulf. December and January are cold at Basra where 19° has been recorded. At Kuwait 27° has been observed. Elsewhere on the coasts temperatures do not as a rule fall to the freezing point.

During March, April and May the temperature rises rapidly and reaches its highest values in July and August. In the latter month, especially, temperatures may be exceptionally high. The heat becomes greater inland, at Basra in June, July and August, the temperature has been known to exceed 120°, and the average maximum temperature is 112° in August. On the coasts the average daily maximum temperature rarely reaches 100° except in the south-east, where at Shārja it is 102° in August and an absolute maximum temperature of 113° has been recorded. At Henjām the average daily maximum temperature is 97° and the average daily minimum is 85°. In the autumn months the nights are usually cool, and it does not get hot until about 1000, but the afternoons are intensely hot. During June, 55 when the sun rises about 0500, it is intensely hot by 0800, and cool nights are the exception.

Relative humidity generally shows a seasonal variation with highest values in winter and lowest values in late spring or summer. At most places on these shores during the winter months the relative humidity usually exceeds 80 per cent. at the morning hour of observation.

In summer the average value of relative humidity is about 70 per cent. with very little diurnal variation. This comparatively high relative humidity coupled with the high temperatures experienced at the same season, may be very trying. Many people leave the coast in summer for this reason.

Inland the air is much drier, making the intense heat more tolerable; at Basra the average relative humidity is between 20 and 25 per cent. from June to September. On some occasions at Basra the air may be almost completely dry.

In the Persian gulf the wet-bulb temperature remains, on the average, below 78° from November to April; but from June to September it exceeds this limit at nearly all ports both in the morning and afternoon (see note on high temperature and humidity on page 7). At Bahrein the high monthly mean of 87° is recorded in the afternoon in August. It is stated that at dry-bulb temperatures between 95° and 100°, the wet bulb may read only 2° lower.

Observations over the open sea have not been collected to any great extent; but it may be mentioned that wet-bulb readings of from 85° to 88° were recorded on 10 successive days in August, 1930, in a vessel in the southern section of the gulf.

Cloud.—The amount of cloud is small. In winter it is about 4 tenths, when the cloud is usually associated with western depressions; there is thus little regular diurnal variation. The eastern part of the gulf is slightly more cloudy than the western. Over the sea the amount of cloud averages about 3 tenths.

In summer, from June to September, almost cloudless skies are the rule. The average amount of cloud does not exceed one tenth, and in some places is insignificant. There is no appreciable diurnal variation.

Rain.—Rainfall is limited almost entirely to the months from November to April, and is usually associated with the passage of western depressions. Most rain falls on the Persian shore where there is a marked orographic effect due to the high land. Thus heavy rain may occur on the Persian shore before the arrival of the warm front, though there is only drizzle on the Arabian shore. The rainfall is everywhere small in amount and does not average 3 in. in December, the wettest month, at the head of the gulf. There are from 2 to 3 days a month with rain during this season, except in the wettest months, December and January, when rain falls on from 3 to 5 days.

On the southern shore of the gulf, rain is stated to fall very rarely.

Information regarding days with heavy rain (0·4 in. or more) is only available for Basra which has an average of one such day in both December and January. It is probable that the frequency is slightly higher on the Persian shore and lower on the Arabian shore of the gulf. Rainfall is not likely to be of long duration, and it occurs mostly in short showers. Records at Basra indicate that rain is most frequent between 0400 and 0800, and least frequent between 2000 and midnight.

From November to April thunderstorms are recorded on from one to two occasions a month at the head of the gulf and less than that in the

south. They occur most frequently at the passage of the cold front. In mid-winter hail sometimes falls.

From June to September the whole region is nearly always completely rainless.

5 Dew is very heavy in the Persian gulf, especially in summer, when, in the morning, it would appear as though there had been a heavy shower of rain.

Visibility.—Poor visibility may be due either to early morning fog or mist, dust haze or salt haze.

10 From October to March early morning fog or mist with visibility of less than one mile may occur on from one to 4 days a month during calm, anticyclonic weather, being most frequent in December and January. It usually clears soon after sunrise.

Dust is the most frequent cause of bad visibility in the Persian gulf.

15 It usually reduces visibility to between 2 and 6 miles, but occasionally, for example on the day following a severe duststorm, visibility may be only about half a mile. During a duststorm itself visibility may be reduced to a quarter of a mile or less.

Average number of days with dust haze.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Persian gulf .	1	1	2	3	2	9	12	7	2	2	1	1	42

From May to July the amount of dust in the atmosphere increases

20 rapidly owing to high temperatures and lack of rain. Visibility near the land is worse than at sea, and, in general, it appears to be worst on the Arabian shore of the gulf and in the Strait of Hormuz. In July, visibility falls to less than 2 miles in the early morning on about one occasion in three at Bahrein, and on about one occasion in four at

25 Henjām.

In June and July, dust haze reducing visibility to less than one mile at any time of the day has been recorded on one day in 2 or 3 at Bahrein and Bushire, and on about one day in 6 at Lingeh and Henjām.

Duststorms are most frequent in June and July. Inland at Basra

30 the average number of days with duststorms, with winds exceeding force 4 and visibility less than half a mile, is 7 in June and 10 in July. On the shores of the gulf, the frequency is less, although comparable data are not available. At Bahrein the maximum frequency occurs in June with 3 days, at Bushire there are 2 days with duststorms. It 35 is clear that the frequency at any place must depend partly on the nature of the country to windward, and on the direction and strength of the prevailing winds. The maximum frequency of both dust haze and duststorms in June and July is related to the strong shamāl of midsummer.

40 In August and September the amount of dust in the atmosphere decreases rapidly, and from October to March dust haze is recorded on one or two days a month only. Duststorms may occur during this period, either in association with thunderstorms or the passage of western depressions, but their frequency is probably not more than 45 one per month.

Misty weather, apparently due to salt haze, occurs during the summer months, especially from June to August. Unlike the winter fogs, it may last for many hours, even until the afternoon. The visibility on the coast is usually from about 4 to 6 miles, the lower visibility being 50 towards the sea in the mornings, but visibility below one mile has been recorded on 4 days in June at Henjām.

The following account of a sandstorm experienced by H.M.S.

Cyclamen at Henjäm is of interest. At about 1630 on September 19th, 1925, the sky assumed a very threatening aspect, similar to heavy rain clouds, though of a lighter colour. At 1705, the storm broke quite suddenly, the wind changing from a light southerly breeze, force 1, to a force of from 5 to 6 from eastward. The air at once became thick with sand and the visibility was reduced rapidly to less than a cable. The storm lasted at this force for about 15 minutes, and then the visibility increased and the wind decreased, though there were still occasional squalls. By 1815, the wind had dropped to force 3, and the visibility increased to about one mile. At 1900, the wind dropped, 10 and then blew from westward. After this storm, the air became drier, and at midnight the wet and dry bulb thermometers differed by 8° , as compared with 2° or 3° before the storm. During the evening, very vivid lightning was observed.

Mirage.—Excessive refraction and mirage are known to occur in 15 some parts of the region, especially on the Arabian shore of the gulf.

PLACE—MUSCAT. LAT. 23° 37' N., LONG. 58° 35' E. Height above Mean Sea Level, 20 feet.
METEOROLOGICAL TABLE COMPILED FROM 5-38 YEARS' OBSERVATIONS, ENDING 1940.

MONTH	PRESSURE at Mean Sea Level Mean in mb	TEMPERATURE Mean of Daily Max. Min. Daily Range in °C	Relative humidity	Cloud amount Scale 0-10	RAIN	WIND DIRECTION												Mean wind speed 0040			
						0400						1200						Mean wind speed 0040			
						N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm	N.	NE.	E.	SE.			
January	1019	°F. °F.	% %	%	3.1	3.3	2	0	2	4	6	4	13	11	68	13	17	14	31	14	
February	1017	65 65	61 61	63 63	—	2.6	2.6	0.7	1	1	2	2	6	5	20	11	9	16	43	17	
March	1014	71 71	72 72	66 66	—	2.4	2.9	0.4	1	2	2	2	5	3	13	20	53	10	40	11	
April	1011	89 89	79 79	88 72	60 60	—	1.7	2.3	0.4	0.8	4	1	2	5	3	14	22	44	8	18	12
May	1008	96 96	85 85	96 85	79 57	—	0.7	1.5	0.0	0.0	0	1	4	3	5	18	17	6	11	21	5
June	1005	98 98	88 88	107 83	62 62	—	2.9	1.0	0.1	0.1	4	0	4	3	2	9	16	45	9	33	20
July	988	96 96	87 87	106 81	74 74	—	3.5	1.6	0.0	0.1	7	14	13	2	3	1	7	9	29	24	11
August	1001	91 91	84 84	101 79	80 80	—	3.2	1.0	0.0	0.1	6	13	16	8	2	0	4	6	22	27	21
September	1008	91 91	83 83	99 99	78 74	—	1.3	0.7	0.0	0.0	7	0	0	0	2	0	0	1	10	12	30
October	1013	91 91	80 80	74 74	63 63	—	0.7	0.4	0.1	0.3	2	3	4	2	4	6	9	53	10	12	16
November	1017	84 84	74 74	89 89	63 63	—	1.5	1.7	0.4	0.7	2	0	1	2	3	4	16	9	4	11	25
December	1019	78 78	69 69	83 83	64 64	—	2.6	2.7	0.7	2	1	0	1	1	2	3	4	13	16	2	1
Means	1010	87 87	78 78	110* 59**	67 67	—	2.1	1.8	—	—	3	4	5	4	3	12	13	52	10	17	9
Totals	—	—	—	116† 49††	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Extreme values	—	—	—	116† 49††	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
No. of years' observations	28	38	38	—	28	4	38	—	—	—	—	—	—	—	—	—	—	—	20	—	2-3 5

Hours of observation 0400, 1200 G.M.T.
** Mean of lowest each year.

* From January 1931 to July 1935, the observations were made at Battul Falaj at a height of 72 feet.
† Days on which visibility falls below 2 nautical miles.

† Lowest recorded temperature.

‡ Observations at 0600 local time.

Authorities :—London, M.O., Weather in the Indian Ocean, Vol. II, Part 3.

Mon. Weath. Rev. (Rep.), Calcutta.

Meteorological Office, Air Ministry.

PLACE—ORMARA. LAT. 25° 16' N., LONG. 64° 39' E. Height above Mean Sea Level, 16 feet.
 METEOROLOGICAL TABLE COMPILED FROM 10 YEARS' OBSERVATIONS, 1928 TO 1938.

MONTH	PRESSURE at Mean Sea Level Mean \bullet	AIR TEMPERATURE Mean of Daily Max. Daily Min.	Relative humidity 0830 1630 0830 1630	Cloud amount Scale 0-10 Average Rainfall mm.	RAIN	WIND DIRECTION												Mean wind speed No. of days \ddagger with strong wind No. of days \ddagger with fog or mist													
						0830																									
						Percentage of observations from																									
						N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm								
January	1018	73	* F.	%	8.1	2.5	1.1	1.1	5	13	17	7	3	2	5	43	2	3	11	13	22	21	6	11	4	—					
February	1016	80	* F.	%	8.8	5.0	3.3	2.7	2	17	2	5	2	3	10	6	44	1	4	6	7	32	32	1	9	5	—				
March	1013	83	* F.	%	8.9	5.6	6.1	2.4	1.8	0.2	0.4	4	11	9	2	1	22	0	1	1	2	42	40	2	4	7	—				
April	1009	90	* F.	%	10.0	6.6	7.5	5.9	2.2	1.9	0.5	0.5	0.5	0.5	0.5	1	10	19	9	35	0	1	1	2	4	44	47	0	10	—	
May	1006	93	* F.	%	10.5	7.5	7.5	6.5	2.3	1.6	0.5	0.5	0.5	0.5	0.5	1	22	16	16	16	16	0	0	0	0	0	46	47	0	11	—
June	1000	95	* F.	%	10.0	7.5	7.5	7.5	2.3	1.6	0.5	0.5	0.5	0.5	0.5	1	22	15	15	15	15	5	5	5	5	5	46	47	0	11	—
July	999	90	* F.	%	9.5	7.8	7.8	7.8	7.8	7.1	7.1	7.1	7.1	7.1	7.1	0	20	47	47	47	47	0	0	0	0	0	46	47	0	11	—
August	1002	87	* F.	%	9.8	7.6	8.0	7.3	7.4	6.1	6.1	6.1	6.1	6.1	6.1	2	22	42	42	42	42	0	0	0	0	0	46	47	0	11	—
September	1006	87	* F.	%	9.7	7.1	8.2	6.8	6.4	5.6	1.0	1.0	1.0	1.0	1.0	2	22	36	50	50	50	2	2	2	2	2	46	47	1	0	8
October	1012	90	* F.	%	9.1	7.1	6.1	5.1	5.1	4.0	0	0	0	0	0	2	22	17	4	2	7	23	10	21	7	14	3	37	41	2	
November	1016	86	* F.	%	9.8	6.5	6.5	5.1	5.1	4.7	2.2	2.2	2.2	2.2	2.2	1	22	16	9	2	4	7	14	21	20	2	11	4	—		
December	1018	77	* F.	%	8.4	4.9	5.2	4.9	5.2	4.9	4.9	4.9	4.9	4.9	4.9	4	22	5	5	5	5	47	1	2	7	15	22	21	16	4	—
Means	1010	85	* F.	%	9.8*	4.8*	7.5	6.1	8.7	2.1	—	6.2	—	—	—	3	8	10	3	2	17	28	6	23	1	3	4	10	38	2	
Totals	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
No. of year's observations	10	10	10	10	4	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	8	8	8	8	8	8	8	8	

* Mean of highest each year.
 ** Observations at 0830.
 * Mean of 24 hours.
 ** Mean of local time.
 † Lowest recorded temperature.
 § Day with wind of force 6 or more.

Authorities :—London, M.O., Weather in the Indian Ocean, Vol. II, Part 4.
 Banerji, B. N., Meteorology of the Persian Gulf and Mekran.

Meteorological Office, Air Ministry.

PLACE—PASNÍ. LAT. 25° 16' N., LONG. 63° 29' E. Height above Mean Sea Level, 10 feet.
METEOROLOGICAL TABLE COMPILED FROM 2-20 YEARS' OBSERVATIONS, ENDING 1938.

MONTH	PRESSURE at Mean Sea Level in mm. Mean	AIR TEMPERATURE Mean of		RAIN		WIND DIRECTION												Mean wind force or speed 0800														
		0800		1600		0800		1600		Percentage of observations from																						
		N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm	N.	NE.	E.	SE.	S.	SW.	W.	NW.														
January	75	• F.	• F.	%	%	2.9	2.0	In.	12	14	1	1	8	22	15	8	5	12	16	26	18	4	5	5	—							
February	77	81	47	69	53	3.4	2.9	2.0	14	14	3	0	1	11	28	22	3	2	9	9	13	31	29	1	3	2	2					
March	85	62	96	63	66	50	2.3	2.0	0.6	0.8	12	6	7	3	0	1	19	25	0	0	1	1	1	1	5	—	2	2				
April	90	88	100	61	71	65	2.2	2.1	0.3	0.4	7	4	5	2	4	38	29	7	0	0	1	1	2	47	52	1	0	6	—			
May	100	94	74	100	68	74	1.9	1.9	1.5	0.0	0	2	14	6	1	11	41	16	7	0	0	0	3	47	47	3	0	7	—			
June	101	94	73	104	73	74	71	3.6	1.8	0.4	0.3	1	2	18	12	3	14	33	12	5	1	0	0	5	13	46	30	0	0	4	2	
July	99	91	73	98	74	73	4.3	0.4	0.6	0	0	14	17	8	18	24	8	11	22	154	16	1	1	1	1	1	22	0	0	3	3	
August	102	89	73	94	72	77	71	7.7	4.0	0.2	0.5	0	2	15	13	6	21	28	6	10	0	0	1	1	1	1	1	1	1	1	3	0.6
September	107	90	72	100	67	81	61	4.9	1.2	0.0	0	4	1	15	7	2	9	32	17	13	10	0	0	0	1	6	56	38	0	0	2	0.3
October	102	91	67	99	69	70	61	1.9	0.3	0.0	0	11	10	12	4	2	20	23	16	1	0	0	4	5	30	49	3	0	6	—		
November	101	86	60	93	61	62	53	1.8	1.6	0.2	0.3	18	12	4	0	0	11	32	23	6	1	1	0	4	10	35	37	4	8	4	—	
December	101	78	53	86	47	72	58	3.0	2.5	1.0	2	19	12	8	3	0	0	8	27	23	6	3	1	7	12	25	23	3	15	4	—	
Means	1010	87	67	—*	73	63	3.6	2.2	—*	—*	9	6	12	0	2	7	23	20	16	2	1	2	11	41	34	2	3	6	—			
Totals	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
Extreme values	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
No. of years' observations	10	20	19	20	19	4	10	20	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				

* Mean of highest each year. ** Highest recorded temperature.
† Lowest recorded temperature. § Days on which visibility falls below 2 nautical miles.

Hours of observation 0800 and 1600 local time.
♦ Observations at 0800 local time.
§ Mean of 24 hours.

Authorities :—London, M.O., Weather in the Indian Ocean, Vol. II, Part 4.
Banerji, B. N., Meteorology of the Persian Gulf and Mekran.

Meteorological Office, Air Ministry.

4-8

1

Wind of force 6 or more.

2

Wind of force 6 or more.

3

Wind of force 6 or more.

4

Wind of force 6 or more.

5

Wind of force 6 or more.

PLACE—BASRA (SHAIBAH). LAT. 30° 25' N., LONG. 47° 39' E. Height above Mean Sea Level, 63 feet.
METEOROLOGICAL TABLE COMPILED FROM 9-16 YEARS' OBSERVATIONS, 1922 TO 1938.

MONTH	PRESSURE at Mean Sea Level Mean "a"	TEMPERATURE Mean of Daily Max. Min. Highest Daily Min. Lowest Daily Max. Each Month	Relative humidity	Cloud amount Scale 0-10	RAIN	WIND DIRECTION												Mean wind speed 0500 1000 0500										
						0600						1600																
						Percentage of observations from						Percentage of observations from																
						N.	N.E.	E.	S.E.	S.	SW.	W.	N.W.	Calm	N.	NE.	E.	SE.										
January	1019	• F. 62	• F. 72	% 91	% 65	37	47	13	3	5	3	10	12	13	5	8	14	3	10	42	5	6	10	3	1			
February	1016	67	46	79	33	88	85	28	1.2	3	7	5	3	5	31	19	12	17	3	0	37	8	7	6	10	6		
March	1014	70	53	91	41	76	32	2.6	0.4	1.2	5	6	8	12	26	6	6	16	4	0	34	7	6	11	5	0.8		
April	1012	80	61	103	50	67	27	2.9	3.8	0.5	1.2	7	2	7	21	12	22	25	4	9	14	3	1	5	12	8		
May	1007	101	72	111	70	60	20	3.0	3.1	0.5	0.2	7	4	2	6	11	20	27	43	7	9	14	3	1	5	12	8	
June	1001	107	77	115	70	45	17	0.2	0.7	0.0	0.0	7	1	0	0	2	10	28	36	16	35	2	1	0	3	15		
July	967	111	81	117	74	34	1.9	0.7	1.0	0.9	0.0	3	0	0	1	1	8	24	9	35	1	0	0	1	6	15		
August	969	112	80	118	73	38	1.4	0.8	1.9	0.9	0.0	4	0	0	1	1	8	43	24	1	3	1	1	6	12	7		
September	1005	107	72	114	65	44	1.4	0.4	0.5	0.2	0.1	2	1	1	10	34	22	10	34	4	6	13	3	1	12	7		
October	1012	96	64	107	55	51	20	1.1	1.9	0.1	0.1	6	2	4	6	14	30	20	9	29	5	8	1	4	4	10		
November	1017	80	55	92	41	76	24	4.0	1.1	2	4	8	6	8	23	17	21	18	5	8	17	4	1	5	9	2		
December	1019	66	45	78	32	87	3.1	4.3	1.0	3	5	4	6	8	5	7	30	21	14	14	3	2	12	4	6	9		
Means	1010	90	62	119*	27*	63	20	2.0	2.7	—	—	5	8	6	7	6	10	29	21	15	27	4	6	10	4	6	11	
Totals	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
No. of years' observations	10	15-16	15-16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
						10	10	10	10	10	10	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15

Hours of observation 0500, 1000 local time.
* Days on which visibility falls below 2 nautical miles.

** Mean of highest each year.
† Lowest recorded temperature.

Authorities :—London, M.O., Weather in the Indian Ocean, Vol. II, Part 3.

* 0500, 0600, 1000.
† Number of days with wind speed of 32 m.p.h. or more.

Meteorological Office, Air Ministry.

CHAPTER II

APPROACHES TO THE PERSIAN GULF FROM SOUTHWARD—COASTS OF 'OMĀN, AL BĀTINA, AND ASH SHUMAILIYA—RAS AL HADD TO DIBBA.

Chart 10c.

COAST OF 'OMĀN.—Ras al Hadd.—This cape, the southern-most point at the entrance of the Gulf of 'Omān; is not easily identified for it is low and sandy as is the coast for about 3 miles southward and 2 miles westward of it. Farther southward, for a distance of about 4 miles, or as far as Ras al Junaiz (*see* Red Sea, and Gulf of Aden Pilot), and farther westward for about 12 miles, or as far as Sūr, the coast of 'Omān is composed of low cliffs. 5

Al Hadd (*Lat.* $22^{\circ} 32' N.$, *Long.* $59^{\circ} 48' E.$) is a village, consisting chiefly of mat huts standing round a fort with three round towers, 10 situated about one mile south-westward of the extremity of the cape, and in the vicinity are some date trees. Another round tower, which, in 1928, was partly in ruins, stands detached on the northern shore of Khōr al Hajr, westward of the town.

A bank, over which there are depths of less than 20 fathoms ($36^{\text{m}6}$), 15 extends about one mile offshore between Ras al Junaiz and Ras al Hadd; this bank is notable for the large fish caught over it. Northward of Ras al Hadd there are considerable depths about half a mile offshore. Ras ash Shajar is situated about 40 miles north-westward of Ras al Hadd, and there is no known off-lying danger 20 between them.

Currents.—For the currents off the south-east coast of Arabia and in the Gulf of 'Omān, *see* pages 10 and 11, respectively. Off Ras al Hadd, the currents are strong, variable, and much influenced by the prevailing winds. 25

Sometimes, usually towards the end of the South-west monsoon, while the current sets northward along the coast southward of Ras al Hadd, it sets south-eastward along the coast from Ras Abu Dāud, situated about 68 miles north-westward of Ras al Hadd, to the latter cape, off which the two currents appear to combine and flow north-eastward at a rate of about 2 knots, the rate being further increased on the east-going tidal stream. Owing to this current, vessels lying to at night off Ras al Hadd have found themselves out of sight of land when day broke on the following morning. 30

Charts 38, 1012, 748b.

Chart 10c.

Anchorages.—Anchorage may be obtained, in depths of from 8 to 10 fathoms (14^m6 to 18^m3), coral, from 5 to 8 cables offshore, with the village of Al Hadd bearing about 270° , but it is exposed, and the 5 depths decrease rapidly within 10 fathoms (18^m3).

During the South-west monsoon, better anchorage may be obtained, in a depth of about 12 fathoms (21^m9), about a quarter of a mile offshore, between the entrances of Khōr al Hajr and Khōr al Jarāma, situated, respectively, about $2\frac{1}{2}$ and 4 miles westward of Ras al Hadd ; 10 or off the entrance of the latter in depths of from 10 to 12 fathoms (18^m3 to 21^m9), mud and sand, at a distance of about half a mile offshore.

When at anchor off the coast, anywhere between Ras al Hadd (*Lat. $22^\circ 32' N.$, Long. $59^\circ 48' E.$*) and Sür, a vessel must always be 15 prepared for a sudden shift of wind northward.

Weather.—For weather in the Gulf of 'Omān, see pages 30–32.

Khōr al Hajr.—**Tidal streams.**—This small inlet affords shelter to fishing boats; within the entrance, which lies between two low cliffs and is about $1\frac{1}{2}$ cables wide, it trends southward for 20 about half a mile and thence eastward for about one mile, extending to a position close westward of Al Hadd. The depths in the entrance are from 5 to $3\frac{1}{2}$ fathoms (9^m1 to 6^m4), but within it soon shoals to $1\frac{1}{2}$ fathoms (2^m7) and its inner and larger part dries. The entrance is between Ras al Haiya and Ras al Hamma, between which Jabal 25 Sifān may be seen in the background; see view facing this page.

The tidal streams near the entrance of Khōr al Hajr set eastward and westward; the east-going stream is weak, but the west-going stream attains a maximum rate of about $1\frac{1}{2}$ knots.

Chart 10c, plan of Khor Jarama.

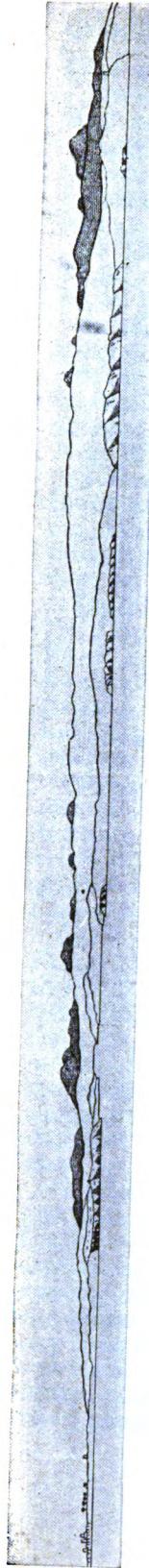
30 **Khōr al Jarāma.**—**Beacon.**—This khōr is a shallow inlet, entered through a tortuous channel between cliffs about 60 feet (18^m3) high.

A white cairn stands, at an elevation of 70 feet (21^m3), on Ras Bu Būraij, the eastern entrance point of the khōr; it is reported to be a good landmark. Close southward of the point, portions of the cliff 35 have fallen and, lying near its foot, are covered at high water.

At the southern end of the entrance channel lies an islet, beyond which the khōr expands into a large and shallow basin, surrounded for the most part by cliffs from 100 to 200 feet (30^m5 to 61^m0) high, but having at its southern end a low sandy beach, close off which is an 40 isolated black flat-topped hill which is conspicuous; on the beach are a few scattered trees.

The khōr affords excellent shelter, and though the turnings in the entrance channel are somewhat sharp it is accessible to steam vessels with a draught of less than 15 feet (4^m6). The inlet is used by native 45 vessels only as a harbour of refuge; there is no village on its shores. There is an abundance of fish in the khōr and the seine may be hauled to advantage on its beaches.

About a quarter of a mile within the entrance, a bank, over which there is a depth of $1\frac{1}{2}$ fathoms (2^m3), extends from the western shore, 50 leaving between it and the eastern shore a channel about 60 yards (54^m9), wide, in which the least depth is $3\frac{1}{2}$ fathoms (6^m4). Southward of this shoal, and through the channel eastward of the islet at the southern end of the entrance channel, a depth of 4 fathoms (7^m3) can be carried to the anchorage situated close southward of the islet.



Jabal Sifān,
bearing 164° ,
Ras al Hamma.

Ras al Hāiyā.
Khōr al Hājir.

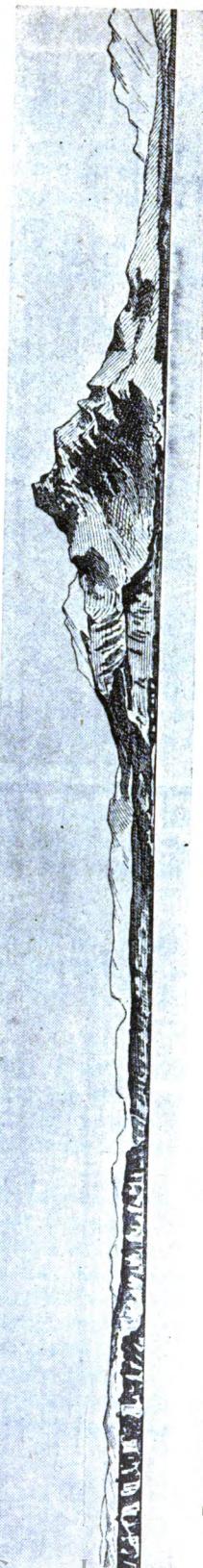
Coast between Ras al Hadd and Khōr al Jarāma from northward.
(Original dated 1906.)

Cairn.
Ras Bu Būrij.
Khōr al Jarāma.



Jabal Ja'lān.
Jabal Khamis,
bearing 238° , 36 miles.
Khōr al Jarāma.
Sūr.

(Original dated 1908.)



Towers at 'Aqā.
Mughrimatain.

Fort Samaisala.

Two views of approaches to Sūr.
(Original dated 1906.)

Jabal Khamis, Fort.
bearing 198° , 12 miles.

Chart 10c, plan of Khor Jarāma.

There is a mooring buoy for the use of aircraft about $1\frac{1}{2}$ cables east-north-eastward of the southern point of the islet.

Anchorage.—Directions.—Good well-sheltered anchorage may be obtained, in depths of from 3 to 4 fathoms ($5^m 5$ to $7^m 3$), between 5 2 cables southward and about half a mile south-westward of the islet at the southern end of the entrance channel.

In 1935, H.M.S. *Fowey* anchored, in a depth of $9\frac{1}{2}$ fathoms ($17^m 4$), off the entrance to the khōr in a position with the cairn on Ras Bu Būraij bearing 139° , distant 2·8 cables. 10

In 1935, H.M.S. *Shoreham* entered the khōr on the first of the outgoing tidal stream and left on the first of the in-going stream. Little difficulty was experienced, although it was necessary to reverse the inner propeller when negotiating the sharp turn. Good anchorage was obtained with the cairn on Ras Bu Būraij (*Lat.* $22^\circ 33' N.$, $15^\circ Long. 59^\circ 44' E.$), bearing 012° , distant $12\frac{1}{2}$ cables.

A vessel entering the khōr is advised to do so at the very first of the out-going tidal stream, as at other times the eddies in the bends of the channel render steering very difficult. The tidal streams setting through the entrance attain a rate of about 2 knots, and in the channel 20 flaws of wind are prevalent.

The isolated flat-topped hill on the southern side of the khōr, bearing 176° , leads to the entrance. A vessel entering should give Ras Bu Būraij a sufficient berth to avoid the fallen portions of the cliff, and should afterwards keep close to the eastern shore until past the shoal 25 about a quarter of a mile within the entrance; thence she should keep in mid-channel and, passing north-eastward of the islet at its southern end, should anchor in the area mentioned above.

Climate.—In February, 1935, H.M.S. *Shoreham* reported that the climate at Khōr al Jarāma, during the South-west monsoon, was far 30 better than within the Persian gulf. A monsoon breeze blew almost constantly, while temperature and humidity were moderate and the nights were cool.

Chart 10c.

Coast.—The coast between the entrance of Khōr al Jarāma and 35 Ras Sharh (Sherh), about $4\frac{1}{2}$ miles westward, is bordered by cliffs; thence to Sūr, 6 miles farther westward, there is a ridge of low broken hills with cliffs in places.

Chart 10c, with plan of Sur anchorage.

Sūr.—Sūr is the name usually given to a group of settlements at 40 the mouth of the Wadi Falaij, which latter enters the sea, forming a narrow creek which affords shelter to small craft. On account of its abundant fertility, it stands out in marked contrast to the surrounding desert.

Fort Sanaisala (Seneisala), a large square light-coloured building 45 with a round tower at each corner, is situated near the coast about 2 miles north-westward of the mouth of the creek and is visible from seaward at a distance of about 10 miles. This fort and another, standing on higher ground about $1\frac{1}{2}$ miles west-south-westward, are surrounded by villages of considerable size. A large square tower, 50 very conspicuous from seaward, stands on a mound about half a mile west-north-westward of Ras Jimeleh, a steep sandy cliff and the western entrance point of the inlet; and a very conspicuous ruined tower, resembling a broken tooth, stands about 7 cables south-south-

Chart 10c, with plan of Sur anchorage.

westward of the observation spot, situated on Ras Jimeleh. The towers, shown on the plan on chart 10c, eastward and south-eastward of East Sūr, are conspicuous, though in a dilapidated condition.

5 **Jabal Khamis**, about 2,900 feet (883^m9) high, situated about 8 miles south-south-westward of Ras Jimeleh (*Lat.* 22° 35' N., *Long.* 59° 33' E.), bearing 212°, leads to the anchorage off Sūr. Jabal Ja'lān (see Red Sea and Gulf of Aden Pilot) rises to an elevation of about 4,050 feet (1234^m4), about 15½ miles south-south-westward of Jabal Khamis, 10 and is conspicuous when seen clear of that mountain. See views facing page 46, and on chart 38.

The creek at Sūr is extensive but dries almost entirely; the depth on the bar at the entrance is about 1½ feet (0^m4).

15 **Muqrainatain**, the largest settlement, is situated on the western side, and 'Aiqa, on the eastern side, of the mouth of the inlet. The houses in both quarters are mostly of mud and stone.

The country inland is partly cultivated and there are numerous date groves.

20 There is a suitable landing place on the southern side of Ras Jimeleh near the observation spot. At high water, a vessel's motor boat can proceed alongside a protecting ledge of rock, but at low water it is necessary to land in a small boat. The Custom house, which is a low, white, inconspicuous building, is situated on the sandy point southward of West Sūr.

25 **Anchorage.**—Anchorage may be obtained off Sūr, in depths of from 8 to 11 fathoms (14^m6 to 20^m1), sand, with the eastern entrance point of the inlet bearing 178°, distant 6 cables. It is unadvisable to anchor closer in, as a heavy swell may arise very quickly.

Chart 10c.

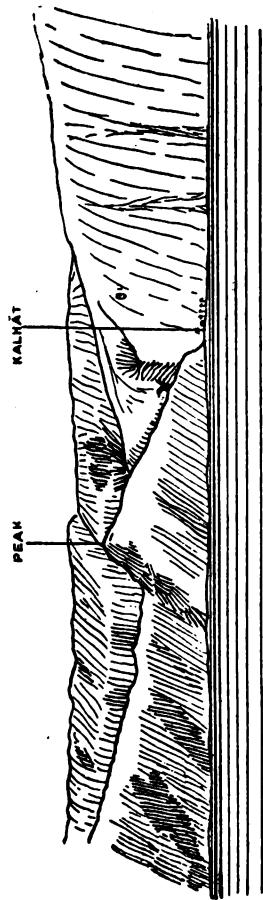
30 **Coast.—Anchorages.**—The coast between Rás Jimeleh and Ras ash Shajar, about 29 miles north-westward, is bordered mostly by low cliffs; about 3 miles from Ras Jimeleh, the land rises to the precipitous Jabal Bani Jābir, of which Jabal Kalhāt is the south-eastern end. The outline of these mountains is regular and they are about 4,400 feet 35 (1341^m1) high; behind them is a higher range, probably over 6,000 feet (1828^m8) high. North-westward of Ras ash Shajar the coastal mountains recede inland and end at the Devil's gap, see page 49.

40 Kalhāt, a small village, situated at the entrance of a gorge about 11 miles north-westward of Ras Jimeleh, may usually be identified by a peak in the coastal range about one mile south-eastward of it (see view facing this page). It is reported that small craft can obtain shelter from northerly winds very close inshore under a small projecting point. There is a conspicuous tower in the village and two smaller ones. Landing may be effected on a shingle beach about half a mile 45 southward of a tower standing on a spit.

46 Anchorage was obtained by H.M.S. *Cyclamen*, in 1925, off the southern side of the spit, in a depth of 17 fathoms (31^m1), about 3½ cables offshore eastward of the village. From this position, the depths rapidly increase seaward to over 40 fathoms (73^m2) and shoal as rapidly 50 towards the coast. The vicinity of the spit should be avoided as foul ground appears to extend some distance from it.

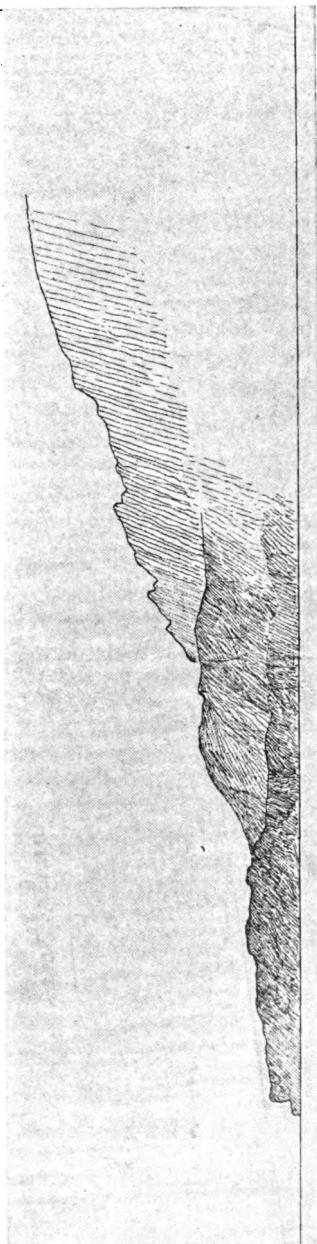
Anchorage may be obtained off Haiwa, about 6½ miles north-westward of Kalhāt, but it is uninhabited.

Tiwi (Taiwa), situated about 3½ miles north-north-westward of



Coast in the vicinity of Kalhāt village from eastward.

(Original dated 1914.)



Ras al Khairān,
bearing 13° ,
7 miles.

Ras al Khairān from north-westward.

(Original dated 1908.)

Chart 10c, with plan of Sur anchorage.

westward of the observation spot, situated on Ras Jimeleh. The towers, shown on the plan on chart 10c, eastward and south-eastward of East Sūr, are conspicuous, though in a dilapidated condition.

5 **Jabal Khamis**, about 2,900 feet (883^m9) high, situated about 8 miles south-south-westward of Ras Jimeleh (*Lat. 22° 35' N., Long. 59° 33' E.*), bearing 212°, leads to the anchorage off Sūr. Jabal Ja'lān (see Red Sea and Gulf of Aden Pilot) rises to an elevation of about 4,050 feet (1234^m4), about 15½ miles south-south-westward of Jabal Khamis,
10 and is conspicuous when seen clear of that mountain. See views facing page 46, and on chart 38.

The creek at Sūr is extensive but dries almost entirely; the depth on the bar at the entrance is about 1½ feet (0^m4).

15 **Muqrainatain**, the largest settlement, is situated on the western side, and 'Aiqa, on the eastern side, of the mouth of the inlet. The houses in both quarters are mostly of mud and stone.

The country inland is partly cultivated and there are numerous date groves.

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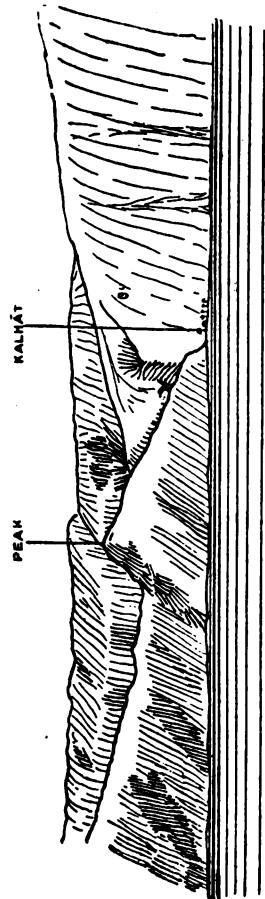
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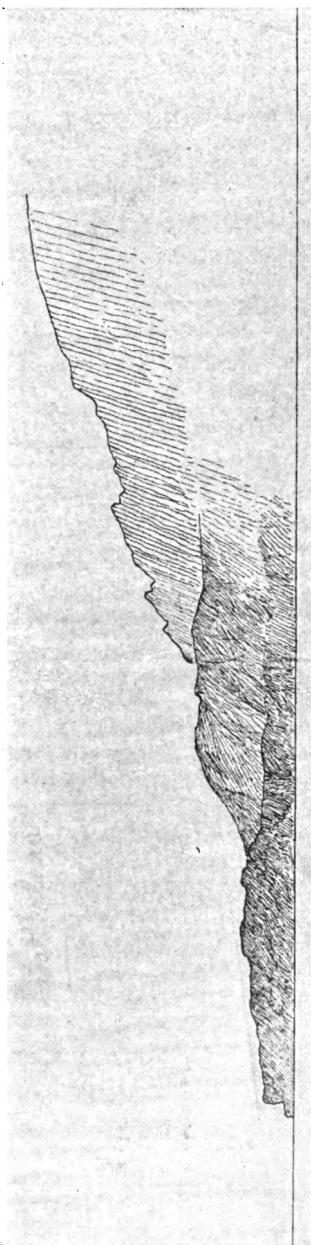
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Tiwi (Taiwa), situated about 3½ miles north-north-westward of



Coast in the vicinity of Kalhät village from eastward.

(Original dated 1914.)



Ras al Khairän from north-westward.

(Original dated 1908.)

Ras al Khairän,
bearing 137°,
7 miles.

Chart 10c, with plan of Sur anchorage.

westward of the observation spot, situated on Ras Jimeleh. The towers, shown on the plan on chart 10c, eastward and south-eastward of East Sūr, are conspicuous, though in a dilapidated condition.

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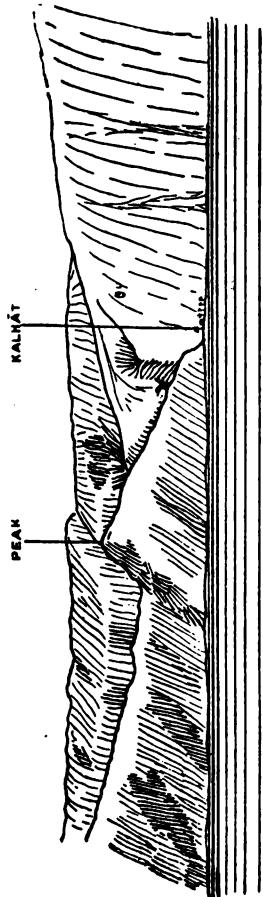
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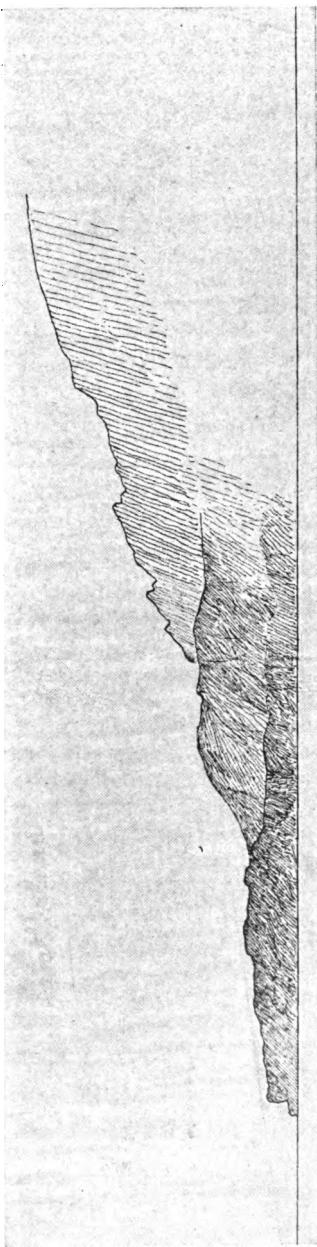
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Tiwi (Taiwa), situated about 3½ miles north-north-westward of



Coast in the vicinity of Kalhāt village from eastward.

(Original dated 1914.)



Ras al Khairān,
bearing 137°,
7 miles.

Ras al Khairān from north-westward.

(Original dated 1908.)

Chart 10c.

Haiwa is a large village with a date grove about 2 cables inland. It is situated at the entrance of a gorge and may thus easily be mistaken for Kalhāt. In 1884, H.M.S. *Dragon* anchored close to the beach northward of a small spit, in a depth of 9 fathoms (16^m5). There are depths of 100 fathoms (182^m9) about $2\frac{1}{2}$ cables offshore abreast Tiwi.

Shāb (Shahāb), about $1\frac{1}{2}$ miles north-westward of Tiwi, is a small village with a tower standing on a low hill at the mouth of a deep gorge in the mountains. Anchorage may be obtained off this village, in depths of from 20 to 30 fathoms (36^m6 to 54^m9) from 3 to 4 cables offshore, but vessels should be prepared to leave it on the approach of a shamāl.

Makalla Wabār, situated between Shāb and Ras ash Shajar (*Lat. $22^{\circ} 56' N.$, Long. $59^{\circ} 12' E.$*), is an anchorage where small craft may obtain shelter from the shamāl. Fins is a small village between Makalla Wabār and Ras ash Shajar. The latter point is low, sandy and well defined only when close-to, but a solitary tree, about half a mile southward of it, is conspicuous. For a distance of about $3\frac{1}{2}$ miles on either side of the cape, the mountains recede from the coast. During a shamāl, native craft anchor, very close in, south-eastward of the cape.

Danger.—A shoal bank extends offshore for a distance of about three-quarters of a mile from Ras ash Shajar, a vessel has anchored on this bank, in a depth of about $5\frac{1}{2}$ fathoms (10^m5), rock and sand, about 4 cables offshore, with Ras ash Shajar bearing 308° and a tower in Fins, situated about $1\frac{1}{2}$ miles southward, 175° .

Coast.—For about 18 miles north-westward of Ras ash Shajar, the coast is bordered by low cliffs, thence it becomes low and sandy to within 2 miles southward of Ras Abu Dāud (Dawud), situated about 28 miles north-westward of Ras ash Shajar, where it is rocky. About 10 miles north-westward of Ras ash Shajar, Jabal Bani Jābir (page 48) recedes from the coast in a west-north-westerly direction and terminates abruptly in a large bluff about 12 miles inland on the southern side of Devil's gap. The north-western side of the gap is formed by the south-eastern end of a range of mountains, extending in a north-westerly direction, which presents an even crest except near its south-eastern end, where Jabal Quraiyāt (Quryat), a small peak, rises to an elevation of about 6,300 feet (1920^m2) ; this range terminates northward and southward in bluffs, that at the southern end falling in steps. The Devil's gap is the great valley which trends south-westward between these two mountain ranges ; when bearing between 216° and 285° it is conspicuous, but when bearing about 250° it is quite open and very remarkable (*see* views on charts 38 and 2837a). Sometimes, when the mountain tops on either side of the gap are enveloped in continuous clouds of a heavy stratus formation, a clear sky beyond may be seen through the gap ; in the evening, this presents a remarkable spectacle. There are very heavy squalls occasionally through this valley in winter.

Jabal Abu Dāud (Dawud) is a detached mountain, about 4,000 feet (1219^m2) high, of irregular outline, deeply furrowed, and of light colour, rising abruptly from the coast in the vicinity of Ras Abu Dāud (*see* views on chart 38 and 2837a). When seen from a distance, bearing about 312° , Jabal Abu Dāud has the appearance of an island, steep on its seaward side with a long slope westward, there being a

Chart 10c.

wide valley between it and the mountains of which Jabal Quraiyāt is the summit. The foot of Jabal Abu Dāud extends for a distance of about 8 miles along the coast.

5 The foregoing mountains are occasionally obscured by haze, but, under these conditions, their outline is often visible for a short time about sunset.

Bimma and Dhibab (Thibáb) are small villages situated, respectively, about 6 and 12 miles north-north-westward of Ras ash Shajar ; at 10 the latter place there are some large date groves.

Daghmar, a small fishing village on a prominent hill, is situated about $8\frac{1}{2}$ miles south-eastward of Ras Abu Dāud, and $1\frac{1}{2}$ miles southward of a low projecting sandy point. A conspicuous white fort on a small mound, visible above the trees, stands on the opposite side of a 15 wadi and indicates the position of the hamlet ; about 4 miles inland of it there is a range of low hills.

Quraiyāt, consisting of a number of stone houses and numerous huts, is situated about 3 miles southward of Ras Abu Dāud (*Lat. 23° 19' N., Long. 58° 55' E.*) on the sandy foreshore, backed by 20 date groves, at the foot of Jabal Abu Dāud. A small creek, the bar of which is awash, is entered close southward of the hamlet, and close off its mouth is a rocky islet, about 50 feet ($15^{\text{m}} 2$) high, on which there is a white square watch-tower, 20 feet ($6^{\text{m}} 1$) in height, which forms a conspicuous mark. There is a conspicuous white square building in 25 the hamlet, and a similar one stands a short distance southward, but the latter is almost hidden in the date groves.

Anchorage.—For a distance of about 3 miles north-westward of the low point northward of Daghmar, the bottom is foul for about half a mile offshore.

30 Anchorage may be obtained off Quraiyāt, in a depth of 12 fathoms ($21^{\text{m}} 9$), sand, about $1\frac{1}{2}$ miles offshore, with the rocky islet off the mouth of the creek bearing 227° and Ras Abu Dāud bearing 337° ; steam vessels may anchor between Quraiyāt and Ras Abu Dāud, about $2\frac{1}{2}$ cables offshore, in depths of from $4\frac{1}{2}$ to 5 fathoms ($8^{\text{m}} 2$ to $9^{\text{m}} 1$).

35 **Coast.**—Ras Abu Dāud is steep and rocky, and is not easily identified at a distance as it is broken up into several points ; about $1\frac{1}{2}$ cables northward of it there is a rocky islet, about 100 feet ($30^{\text{m}} 5$) high. Small vessels could obtain shelter during a shamāl in the small bay close southward of the point.

40 For about 4 miles north-westward of Ras Abu Dāud the coast is bordered by cliffs, from which Jabal Abu Dāud rises abruptly ; thence it becomes low and sandy as far as Sifa, a village about $6\frac{1}{2}$ miles farther north-westward. Here the foot of the mountains trends inland and between it and the coast is a plain.

45 At Sifa there is a square tower, standing on a mound about 60 feet ($18^{\text{m}} 3$) high, with a date grove close to it.

A range of rugged precipitous hills extends from Sifa to Ras al Hamar (page 57), about 20 miles north-westward, the intervening coast being bordered almost entirely by cliffs alternating with small 50 sandy bays and inlets or coves.

Ras al Khairān, about 5 miles north-north-westward of Sifa, is a vertical cliff, about 60 feet ($18^{\text{m}} 3$) high, of a light colour, as also are the hills within it. (See view facing page 48.) There are four small sandy bays south-eastward of Ras al Khairān :—Khaisat as Sum

Chart 10c.

is the south-easternmost ; Sifat ash Sheikh, the next, in which there is a grove of date trees ; and the north-westernmost, between Ras Kizkizan, a rocky peninsula on its eastern side, and Ras al Khairān, has depths of about 3 fathoms ($5^{\text{m}}5$), but it is open north-eastward. 5

Chart 10c, plan of Bandar Khairān.

Bandar Khairān.—Anchorage.—Immediately westward of Ras al Khairān are two islands, but, owing to the similarity of their appearance with, and their closeness to, the mainland, they are not easily 10 distinguished. In the channel between the western island and the mainland is Bandar Khairān (*Lat.* $23^{\circ} 32' N.$, *Long.* $58^{\circ} 44' E.$).

There is a small rocky detached islet close off the north-eastern side of the eastern island ; the channel southward of the island, in which there is a rock above water, is narrow, tortuous, and shallow. 15

The western island is about 300 feet ($91^{\text{m}}4$) high, steep, and rocky ; close to its north-eastern end there is a small detached rock above water, between which and the eastern island is the eastern entrance channel. The anchorage in the channel between the western island and the coast southward of it has a least width of 70 yards ($64^{\text{m}}0$), 20 with depths of from $3\frac{1}{2}$ to 5 fathoms ($5^{\text{m}}9$ to $9^{\text{m}}1$) in the fairway ; off the south-western part of the island there is a rocky islet in the middle with depths of 6 fathoms ($11^{\text{m}}0$) in the channel northward of it on its northern side, and from 3 to 4 fathoms ($5^{\text{m}}5$ to $7^{\text{m}}3$) in the channels on its other sides. Southward of this islet is a narrow passage leading 25 into a shallow bay extending about one mile southward, and ending in a swamp ; on its shores is a large grove of date trees and a small village.

This harbour is only frequented by fishing boats ; the winds are usually baffling, especially in the western entrance, and blow in violent 30 gusts during a shamāl.

Chart 10c.

Coast.—Yiti, a small village, stands on the shore of a small sandy bay entered about $2\frac{1}{4}$ miles west-north-westward of the western entrance to Bandar Khairān, the coast between being bordered by rocky 35 cliffs.

Shaikh rock, about 80 feet ($24^{\text{m}}4$) high, stands on the foreshore at Yiti with a smaller rock, about 50 feet ($15^{\text{m}}2$) high, eastward of it ; these rocks are conspicuous from seaward as they appear black against the light-coloured hills inland. The most sheltered landing place is 40 about 3 cables westward of Shaikh rock ; but a small reef, which probably dries, lies in its approach.

Close westward of Shaikh rock is the entrance to a small lagoon, the channel into which runs parallel with the coast behind Shaikh rock. Small boats can enter at half tide ; the lagoon is suitable for seining 45 and fish are plentiful.

Between Yiti and Bandar al Jissa, about 2 miles north-westward, the coast is rocky.

Chart 10c, plan of Bandar Jissah.

Bandar al Jissa.—Anchorage.—This bay is protected by a 50 precipitous light-coloured island, about 140 feet ($42^{\text{m}}7$) high, on either side of which there is a channel leading into the harbour ; close offshore in its south-western part is an islet. In the eastern entrance channel there is a least depth of 7 fathoms ($12^{\text{m}}8$) in the fairway ; the western

Chart 10c, plan of Bandar Jissah.

entrance is almost blocked by a flat rock with depths of 9 feet (2^m7) in the narrow channels on either side of it.

The headland which forms the eastern entrance point of the bay ⁵ presents, when approached from either direction along the coast, a remarkable likeness to a black sheep's head. The bay is difficult, however, to identify from seaward at a distance greater than one or 2 miles ; the best guide to its locality is the very light colour of the cliffs in the immediate vicinity ; its position in relation to Shaikh rock ¹⁰ also forms a guide.

Westward of the islet in the bay is a village which was reported in 1919, to have fallen into decay, there being at that time not more than 50 inhabitants. The best landing place is reported to be on the sandy beach in front of the village.

¹⁵ Anchorage may be obtained in Bandar al Jissa (*Lat. 23° 33' N., Long. 58° 39 E.*), in depths of from 4 to 7 fathoms (7^m3 to 12^m8).

Chart 10c.

Coast.—The coast between the western entrance point of Bandar al Jissa and Muscat, about 5 miles north-westward, is indented by a ²⁰ succession of sandy bays separated by rocky points. There are numerous hills near the coast, behind which mountain ranges extend inland.

Jabal Barda (Saddle hill), about $3\frac{1}{2}$ miles west-north-westward of the western entrance point of Bandar al Jissa, and about $1\frac{1}{2}$ miles ²⁵ inland, rises to an elevation of 1,340 feet (408^m4) ; it terminates in two sharp peaks which form the summits of a very rugged dark range and when in line bear about 250° ; the hill, however, is not particularly conspicuous from northward, as the peaks then appear to be some distance apart. See view facing page 53 and on chart 2837a.

³⁰ Several villages stand on the shores of the sandy bays mentioned above. In the vicinity of Al Bustan, the southernmost, about $1\frac{1}{2}$ miles south-eastward of Jabal Barda, there is a date grove. Qantab, a small fishing village lies under Jabal Barda ; in the bay, a pyramidal rock lies close offshore, near the village.

Charts 2869, 10c.

Sidāb is a fishing village on the northern shore of Bandar Sidāb, situated about $3\frac{1}{2}$ miles north-westward of Bandar al Jissa ; it is separated from Muscat by a short ridge. The coast on either side of Sidāb is bordered by cliffs rising to rugged hills.

40 Chart 2869.

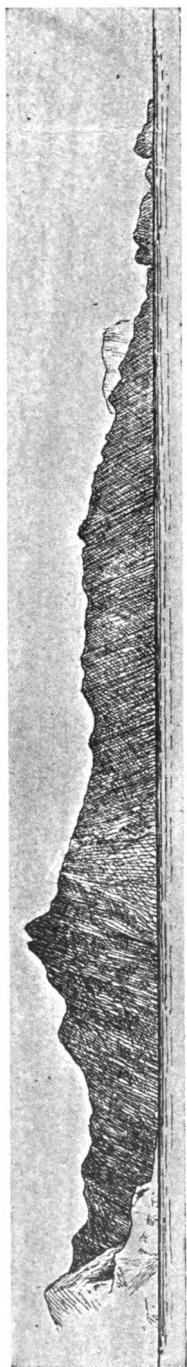
Ras al Kanāda, about half a mile north-eastward of Sidāb, terminates in a cliff about 250 feet (76^m2) high, with Pillar rock, about 100 feet (30^m5) high, about $1\frac{1}{2}$ cables northward of it. Two small rocks, from 4 to 6 feet (1^m2 to 1^m8) high, lie within one cable of the ⁴⁵ coast about a quarter of a mile north-westward of Pillar rock.

Mughab is a small cove, about half a mile north-westward of Pillar rock, which affords good landing for boats southward of Jalālī fort, (page 53). Anchorage, affording shelter during a shamāl, may be obtained off Mughab southward of Muscat island, but care must be ⁵⁰ taken to avoid anchoring in the area indicated by pecked lines on the chart owing to the existence of cables.

Charts 2869, 10c.

MUSCAT COVE.—Aspect.—This cove is entered between Ras

Charts 38, 2837a, 748b.

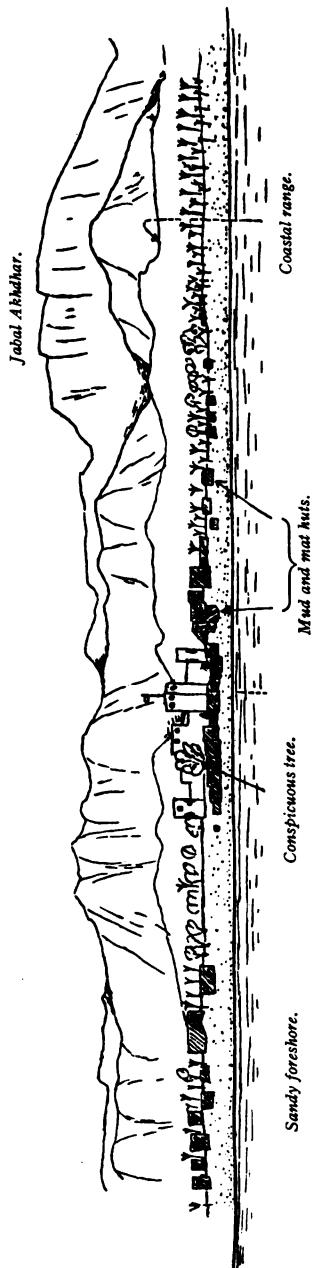


Jabal Barda.

Ras Muscat,
bearing 280°,
20 miles.

Approaches to Muscat from east-south-eastward.

(Original dated 1908.)



As Suwaiq town from northward.

(Original dated 1922.)

Charts 2869, 10c.

Muscat, the northern extremity of Muscat island, and Ras Kalbūh, about $5\frac{1}{2}$ cables west-south-westward.

From eastward or westward, Jabal Barda is remarkable; about 30 miles south-south-eastward of Muscat is the Quraiyat range (see page 49), westward of which are Jabal Tāyin and Jabal Nakhl (page 58) with low ranges between them and the coast. From westward or northward Fahl islet (page 57) is a good mark. Burna Sāli is a very conspicuous tower, situated about $2\frac{1}{2}$ cables southward of Mughab.

5

10

Chart 2869.

The coast of Muscat island is rocky and precipitous. A pillar rock, about 100 feet (30^m5) high, lies close off its south-eastern extremity. The western side of the island is covered with the names of European vessels of different nationalities, painted in white on the rocks, a time-honoured custom whereby their first visit is recorded. In several cases the White Ensign (with yellow staff) is depicted with the name of the vessel, the position of that painted by H.M.S. *Perseus* being indicated on the chart.

15

Ras Muscat (*Lat* $23^{\circ} 38' N.$, *Long.* $58^{\circ} 36' E.$) is a round sloping bluff with cliffs southward of it. (See view facing this page and on charts 2869 and 2837a). A reef extends about a quarter of a cable northward from the point, and about a quarter of a cable farther northward is Fisher's rock, 10 feet (3^m0) high, with depths of from 2 to 3 fathoms (3^m7 to 5^m5) between.

25

A round tower is situated on the north-western point of Muscat island, about three-quarters of a cable westward of the lighthouse.

Sira tower is situated on the northern slope of the island, $1\frac{1}{2}$ cables southward of Ras Muscat.

Ras Kalbūh is the northern extremity of a detached precipitous ridge rising to an elevation of 435 feet (132^m6), about 3 cables southward; at the northern end of the ridge, about half a cable southward of the point, is a conspicuous white tower; the ridge slopes down at its south-eastern end to a cliff, about 150 feet (45^m7) high, on which is Mirāni fort with a battery on the shore below it, situated about $6\frac{1}{2}$ cables south-south-eastward of Ras Kalbūh.

30

Sira al Gharbiyah (Gharbi) is a fort, with two tiers of embrasures and a round tower on its highest part, standing on the extremity of a spur which projects eastward into the cove from the middle of the ridge, about $3\frac{1}{2}$ cables south-eastward of Ras Kalbūh. See view on chart 2869.

40

Jalāli fort, with two tiers of embrasures, crowns the summit of a small detached hill, about 150 feet (45^m7) high, in the south-eastern corner of Muscat cove on the northern side of Mughab cove. Between this hill and the southern end of Muscat island is a detached islet, about 100 feet (30^m5) high, which is connected to the coast southward of it by a reef; between this islet and Muscat island is a boat passage named Duwairah (Duweira), in which there is a depth of about 2 feet (0^m6).

45

The town of Muscat is situated at the head of Muscat cove between Mirāni and Jalāli forts. This town, and also those immediately north-westward of it, do not show up well under the dark hills and are only visible when the coves, at the head of which they are situated, are open. In the morning, with the sun shining on it, Jalāli fort some-

50

Charts 10c, 38, 2837a, 748b.

Chart 2869.

times shows white on westerly bearings against the dark hills behind it.

Makallah bay is the shallow indentation on the western side of the cove, southward of Sira al Gharbiya ; it is used as an anchorage for the smaller native craft ; on the shore at the head of the bay are some coal sheds from which a pier, with a depth of 4 feet (1^m2) at its head, extends in an east-north-easterly direction ; though used for loading and unloading coal lighters, the pier is of no use as a landing place for Muscat as there is no communication by road.

Danger.—A rocky patch, over which there is a depth of 2 fathoms (3^m7), lies about half a cable from the western side of Muscat island, about 2 cables southward of Ras Muscat. Fisher's rock (*Lat. 23° 38' N., Long. 58° 36' E.*), bearing about 020° , and well open of the north-western extremity of Muscat island, leads north-westward of the danger ; and Pillar rock, bearing about 144° , and well open of the south-western extremity of that island, leads south-westward of it.

Lights.—Buoys.—A light is exhibited, at an elevation of 273 feet (83^m2), from a white tower, 14 feet (4^m3) in height, on the northern summit of Muscat island, about one cable southward of Ras Muscat.

A light is exhibited, at an elevation of 62 feet (18^m9), from the flagstaff at the British Consulate, about half a cable south-westward of Jalali fort. A light is exhibited, at an elevation of 165 feet (50^m3), from a position about $2\frac{1}{2}$ cables south-south-eastward of the British Consulate. These two lights in line, bearing 159° , lead into Muscat cove.

Several red cylindrical buoys, for the use of aircraft, are moored on the western side of Muscat cove between Sira al Gharbiya and Mirāni fort.

Anchorage.—Directions.—Small vessels should anchor off the western shore of the cove, near Sira al Gharbiya ; but a good berth for a vessel of moderate size is on the line of the leading marks and westward of a white-topped pinnacle rock, situated about $2\frac{1}{4}$ cables southward of Ras Muscat. The cove, however, is open to the shamāl, and as that wind usually blows a couple of points off the western shore while the sea sets straight in, it is advisable during its continuance to lay out a stern anchor to keep the vessel head on to the swell. During hot weather, the vessel's stern may be hauled in towards the white-topped pinnacle rock by a hawser secured to it or, preferably, by a stern anchor laid out in that direction ; in this position she will lie broadside on to the breeze. There is also another convenient rock to which a stern hawser may be secured, the position of which is easily identified for it is a large, round, dark-coloured rock and immediately behind it "H.M.S. *Philomel*" is painted in white letters on a blue ground.

The nashi sends in a heavy swell, and there is little or no shelter from it ; but the bottom is of sand and shells, and with a long scope of cable vessels seldom drag ; moreover, near the rocks there appears to be a rebound of the sea which lessens the strain on the cable.

Outside the cove, in depths over 20 fathoms (36^m6), the bottom is of clay or mud.

The area at the head of the harbour, in depths of less than 5 fathoms (9^m1), is not usually available for vessels as it is nearly always encumbered with native craft.

Chart 2869.

A vessel should enter the cove with the leading light structures in line ; the rear light structure may be identified by its proximity to the eastern extremity of the wall, marked by a black and white patch, eastward of Buma Sālī (*Lat. 23° 37' N., Long. 58° 35' E.*). She should not anchor until the pinnacle rock with the white top bears less than 109°, so as to clear the 2-fathom (3^m7) patch near it. 5

The usual landing place is at a concrete pier at the south-western corner of the cove : there are depths of from 4 to 6 feet (1^m2 to 1^m8) on the eastern side and about 2 feet (0^m6) on the southern side of the ¹⁰ pier ; the northern side is foul. Landing can also be effected in a small boat on the beach immediately in front of the British Consulate. When there is a surf on the beach the best landing is in Mughab bay, access to which can be had by proceeding through Duwaira passage.

Muscat.—This picturesque town is protected on its eastern and part ¹⁵ of its southern sides by precipitous hills, the remainder of the southern side, and the western side, is protected by a wall. Outside the wall, and between it and the rugged hills encircling the town, every available level spot is occupied by mat huts.

The Sultan's palace, about 1½ cables westward of the British Consulate, is the largest building on the sea front ; the mosques are small and have neither dome nor minarets. In addition to those already mentioned, there are several towers on the surrounding hills. 20

Muscat is the capital of 'Omān and, with Al Matrah (page 56), has a population of about 12,700. 25

Great Britain is represented by a Political Agent who is also the Consul.

Harbour facilities.—Fresh provisions are plentiful, though in summer vegetables are scarce.

Water can be brought off to vessels in tanks, each of about 2 tons capacity. 30

There is a hospital, situated westward of the British Consulate.

Trade.—The principal exports are dates and dried fish ; the chief imports are rice, coffee, cotton piece goods, wheat and flour.

Health.—Muscat may be considered to be a fairly healthy port, provided ordinary precautions are taken ; if using shore water it ³⁵ should be purified by boiling or filtration, and care must be taken to protect oneself from mosquitos, which during winter, are numerous in the town, and cause a considerable amount of malaria amongst the natives.

Meteorological table.—See page 38. 40

Communications.—Mail steamers call at Muscat on their way to and from the Persian gulf ; except for these, few steam vessels now enter the port.

Muscat is connected to the general telegraph system.

Consul.—A British Consular officer is stationed at Muscat. 45

Coast.—Kalbūh cove is entered between Ras Kalbūh and Ras al Baz, about 3½ cables westward.

Ras al Baz is a small solitary hill, about 100 feet (30^m5) high, situated at the end of a promontory fringed with drying reefs and on the summit of which is a round tower. The hill is connected to the ⁶⁰ higher part of the promontory, southward of it, by a sandy isthmus on which stands the village of Dōhab (Doha).

A rocky spit, which dries about 8 feet (2^m4), extends about half a cable offshore close southward of Ras Kalbūh.

Chart 2869.

Kalbūh is situated at the head of the cove and extends into the pass leading to Muscat, to the western suburbs of which it is almost joined.

5 **Matrah bay.—Rock.**—Matrah bay is entered between Ras al Baz (*Lat. 23° 37' N., Long. 58° 35' E.*) and Ras Kowāsir, about three-quarters of a mile north-westward. The latter is a precipitous point, with a low white islet lying about one cable north-eastward of it, and a rocky ledge, on which are some rocks about 50 feet (15^m2) high, 10 extending eastward for about three-quarters of a cable from its south-eastern extremity.

Matrah peak, the summit of a range of hills, is remarkably sharp and rises to an elevation of 1,010 feet (307^m9), about one mile south-south-westward of Ras al Baz.

15 **Riyām cove,** at the head of which is the village of the same name, is situated in the south-eastern part of the bay. Al Matrah castle stands on the summit of a detached hill, about 100 feet (30^m5) high, situated on the southern shore of the bay, about three-quarters of a mile south-westward of Ras al Baz. This hill separates the village of Matairz, eastward of it, from the walled town of Al Matrah, in the south-western corner of the bay. Other villages stand on the shores of the small indentations in Matrah bay.

20 A small rock, over which there is a depth of $1\frac{1}{2}$ fathoms (2^m7), lies about 2 cables northward of the south-eastern tower of Al Matrah castle.

25 **Anchorage.**—Matrah bay affords good shelter in a shamāl, but is open to the nashi. The larger native vessels always anchor in this bay in preference to Muscat cove. The anchorage is off the north-western shore, 3 or 4 cables north-eastward of Arbaq South fort, 30 about 4 cables south-westward of Ras Kowāsir.

In 1935, H.M.S. *Shoreham* rode out a strong shamāl with the tower on Ras al Baz bearing 090° , distant 7 cables.

30 **Coast.**—Shataifa cove, entered between Ras Kowāsir and Ras ash Shataifa, about 3 cables north-north-westward, is exposed to the nashi, and is therefore not used as an anchorage.

Ras ash Shataifa is a vertical cliff, at the north-eastern end of a ridge of hills, from 200 to 300 feet (61^m0 to 91^m4) high. The small village of Shataifa is situated at the head of the cove.

Chart 10c.

40 The coast between Ras ash Shataifa and Ras Aiyint, a small projecting point, about one mile westward, is cliffty. Little Dārsait is a small shallow bay, westward of Ras Aiyint, which is well sheltered by rocks and in which small boats could safely anchor. On the shore of the bay are a few huts.

45 Chart 10c, plan of Dar sait anchorage.

Dārsait anchorage.—Rock.—About $2\frac{1}{2}$ miles westward of Ras ash Shataifa is the mouth of a deep valley covered with palm trees, at the foot of which, situated on a sand and shingle beach, is the village of Dārsait.

50 Open anchorage may be obtained, in a depth of about 6 fathoms (11^m0), sand, about a quarter of a mile northward of the village, but rocks extend about one cable offshore on either side of it.

A rock, over which there is a depth of 2 fathoms (3^m7), was reported, in 1915, to lie about $2\frac{1}{2}$ cables offshore, $6\frac{1}{2}$ cables north-eastward

Chart 10c, plan of Dar sait anchorage.

of the fort in the village, and a ledge of rocks extends nearly one cable north-eastward from the western end of the beach.

The beach is fairly steep-to, and landing in ordinary weather is easy; but it would probably be impracticable during either a shamāl or a nashi; the best place appears to be at the western end of the beach. 5

The village (*Lat. 23° 38' N., Long. 58° 31' E.*) is in two parts; a stone fort, about 15 feet (4^m6) in height, stands in front of the western part and is the only stone building; a smaller fort is hidden amongst the huts of the eastern part. 10

There are two towers on the spurs of the hills, on either side of the valley; that on the eastern side is about 30 feet (9^m1) in height, and that on the western side, which is in ruins, 50 feet (15^m2). 10

Chart 10c.

Coast.—Islet.—Close westward of Dārsait, a conspicuous red hill, 15 the summit of which is in the form of paps, rises above the cliffs at its base to an elevation of about 400 feet (121^m9), whence a sandy beach extends about a mile north-westward to a sloping point, named Ras al Abyadh. A short distance westward of this point is Ras al Hamar, a red cliffy point, about 150 feet (45^m7) high. 20

Fahl, a precipitous islet, about 280 feet (85^m3) high, and steep-to, lies about 2 miles northward of Ras al Hamar. It is of a light colour and usually shows up against the land (*see* view on chart 2837a). Landing can be effected only at its south-western point for the cliffs are overhanging on all other sides. The passage between the islet 25 and the mainland is clear of dangers in the fairway and deep.

From Ras al Hamar, the coast turns south-westward and westward for about 20 miles, forming Kubbat al Hail, a large sandy bay, at the eastern end of which there is a small creek, with a few huts and mangrove trees. 30

Ghukra (Gobra) and Khalil are two small villages, about a quarter of a mile apart, situated about 7 miles westward of the entrance to the creek. They stand on the eastern and western sides, respectively, of a date grove and consist entirely of mat huts which are not conspicuous. The date grove is fairly conspicuous and lies in a dip of 35 the sand dunes, which fringe the coast and is elsewhere about 20 feet (6^m1) high; it lies about 3 cables inland and can be clearly seen from seaward at a distance of about 4 miles. Westward of Khalil there are no date palms until the vicinity of Hail al 'Amair, about 7 miles north-westward, is reached. 40

Charts 10c, 2837a.

AL BĀTINA.—General remarks.—The coast of this important maritime district of the Sultanate of 'Omān extends westward and north-westward for about 140 miles from Hail al 'Amair ('Umair) almost to Khatmat Milāha, a spur of the hills descending close to the 45 coast, 3 miles north-north-westward of Al Murair, (*see* page 64); the whole of this stretch is about 25 feet (7^m6) high, and sandy, with many towns and villages, each one having a fort, more or less in ruins; date groves are almost continuous along the coast, but here and there are sand hills; the coast is seldom visited by Europeans. 50 The country inland, for a distance of about 12 miles, is generally level.

With the exception of those in the vicinity and southward of the Daimāniyāt islands (page 59), the coast is clear of off-lying dangers,

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Kalbūh is situated at the head of the cove and extends into the pass leading to Muscat, to the western suburbs of which it is almost joined.

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Anchorage.—Matrah bay affords good shelter in a shamāl, but is open to the nashi. The larger native vessels always anchor in this bay in preference to Muscat cove. The anchorage is off the north-western shore, 3 or 4 cables north-eastward of Arbaq South fort, 30 about 4 cables south-westward of Ras Kowāsir.

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With the exception of those in the vicinity and southward of the Daimāniyāt islands (page 59), the coast is clear of off-lying dangers,

Charts 10c, 2837a.

but it possesses neither harbours nor creeks that will admit any but very small boats. It is quite open both to the shamāl, and to the nashi, and for the latter it is a lee shore, consequently, all trade with Muscat is carried on in boats which can be hauled up on the beach in bad weather.

The depths offshore appear to be regular, but the whole coast has been imperfectly surveyed.

Vessels should not anchor in depths of less than 5 fathoms (9^m1), especially during the shamāl season; within this depth the bottom is very uneven and in places rocky. Landing is usually difficult.

The hills trend south-westward from Ras al Hamar (*Lat. 23° 39' N., Long. 58° 30' E.*), and increase in height until they culminate in Jabal Tāyin, 5,250 feet (1600^m0) high, situated about 21 miles from the point; White hill, about 8 miles south-westward of the point and 4 miles inland, may be identified by its colour.

Wadi Samāil, a great valley, separates the ranges of Jabal Tāyin and Jabal Nakhl, the latter extending north-eastward and south-westward on the western side of the valley. The Nakhl range has four principal peaks, the highest, situated about 45 miles south-westward of Ras al Hamar, rising to an elevation of 7,740 feet (2359^m2). Jabal Nakhl, about 7,000 feet (2133^m6) high and 5½ miles farther north-eastward, appears like a pepper-box on the top of the mountains; it is visible from off Muscat, but farther westward becomes hidden behind other peaks until near Barka, situated about 33 miles westward of Ras al Hamar.

Seen from north-westward it appears as one of the few sharp peaks along the coast which are indicated on the chart and is the most easily distinguished of the peaks of this range.

Jabal al Akhdhar is a great bluff, about 9,900 feet (3017^m5) high, situated about 35 miles west-south-westward of Jabal Nakhl, but it is not visible from eastward until clear of that range; it has two steps in its upper part, the northern face appearing almost precipitous, and its summit slopes gradually westward from them. There are lower ranges between it and the coast. See view facing page 53.

From Jabal al Akhdhar, an apparently continuous range of mountains extends in a northerly direction to the entrance of the Persian gulf and is visible from seaward for the whole of its length, gradually approaching the sea until, at Al Murair (page 64) there is only a comparatively narrow plain between the foothills and the coast.

Supplies of cattle, poultry, fish, and vegetables might possibly be obtained at the coastal towns.

Chart 10c.

Coast.—Anchorage.—Danger.—Hail al 'Amair is a small village westward of which the date groves extend continuously to and beyond As Sib.

As Sib (*Lat. 23° 41' N., Long. 58° 10' E.*), about 4 miles west-north-westward of Hail al 'Amair, is a scattered town with two small detached forts. The position of the town is difficult to identify on account of the continuous coastal belt of palm trees. During the hot season, the mountains inland are seldom clearly visible except at sunrise and sunset. Two white-domed buildings and one of the forts are, however, visible from seaward, and at a short distance southward are two gaps in the palm trees about three-quarters of a mile apart,

Chart 10c.

in the western of which there is a ruined fort. Seaward of As Sib, Jabal Barda is conspicuous. The town is cooler and healthier than Muscat.

Anchorage may be obtained off As Sib, in a depth of about 5 fathoms (9^m1), sand, about half a mile offshore, but there is no protection whatever.

Ras al Ghaf is a broad low point about 5 miles westward of As Sib ; in its vicinity for a distance of about 4 miles, there are no date trees near the coast, and sand hills rise at a short distance inland. The 10 point is named from two large ghaf or acacia trees, which, prior to 1870, stood on its most projecting part.

A sand bank, over which there is a depth of 3 fathoms (5^m5), lies about 1½ miles northward of Ras al Ghaf ; between the bank and the coast, there is a depth of about 4 fathoms (7^m3).

Off-lying islands.—Dangers.—Anchorage.—Daimāniyāt islands, called by the Arab seamen Saba' jazāir, lie nearly parallel with the coast and from 6½ to 8 miles offshore ; they are all quite barren and waterless, and are frequented by fishermen from the mainland.

The group was reported, in 1934, to lie farther northward than 20 charted.

Jazīrat Kharāba, the eastern of these islands, is situated about 8½ miles northward of As Sib, and is about 25 feet (7^m6) high, with black rocky points separated by white sandy beaches ; a reef extends about half a mile off its northern and eastern sides, and there are 25 depths of 20 fathoms (36^m6) a quarter of a mile off it. There are several detached rocks round the island.

The easternmost islet of the middle group, which consists of seven islets and some detached rocks, lies 3 miles west-north-westward of Jazīrat Kharāba. The islets of this group are from 30 to 40 feet 30 (9^m1 to 12^m2) high, with low cliffs of light-brown colour, difficult to distinguish at night. On the westernmost and largest islet are two small hills separated by a valley. The islets are reported to be steep-to, with no off-lying shoals, but soundings are no guide to a vessel approaching them from southward. H.M.S. *Hastings* anchored, in 35 1931, about 4½ cables southward of the eastern end of the westernmost islet of this group, in a depth of 15 fathoms (27^m4), sand. This position provided good shelter from a heavy swell which, due to a light shamāl then blowing, was rolling in round the islets. There are two good sandy beaches near the middle of the southern side of the islet where 40 landing was easily effected.

The western group, consisting of Jazīrat Jun and three islets or rocks, lies about 3½ miles west-south-westward of the middle group, the passage between being clear with depths of about 19 fathoms (34^m7). Jazīrat Jun is 107 feet (32^m6) high near its western end, 45 of light-brown colour, and is not easily seen at night. Fair anchorage may be obtained on the southern side of Jazīrat Jun, in depths of from 7 to 8 fathoms (12^m8 to 14^m6), sand, about a quarter of a mile off a small sandy beach ; the position is sheltered from northward, though much swell rolls round the islet during strong winds. Half 50 a mile southward of Jazīrat Jun (*Lat.* 23° 49' *N.*, *Long.* 57° 58' *E.*), is a 4½-fathom (8^m2) shoal, with depths of 8 fathoms (14^m6) between it and the islet. A spit, with a depth of 2 fathoms (3^m7), extends about 1½ cables south-eastward from the western islet or rock.

Chart 10c.

Clive rock lies about one mile west-north-westward of Jazirat Jun ; it is detached and has a depth of $1\frac{1}{2}$ fathoms ($2^{\text{m}}7$), coral rock, around which there are depths of from 14 to 20 fathoms ($25^{\text{m}}6$ to $36^{\text{m}}6$) at a distance of a quarter of a mile. The rock is visible from aloft when the sun is in a favourable position.

The depths southward of Daimāniyāt islands are fairly regular and less than 20 fathoms ($36^{\text{m}}6$), except in the vicinity of the eastern group. In depths of less than 20 fathoms ($36^{\text{m}}6$), the bottom is mud 10 and sand ; in greater depths it is chiefly mud.

Coast.—Anchorages.—Danger.—Abu Nahail is a hamlet situated about 8 miles westward of As Sib. About 7 miles farther westward is the town of Barka, in the middle of which is the Shaikh's castle, a lofty and conspicuous building with four large flanking towers at its 15 corners. The town extends for about 3 miles along the coast amongst the date plantations which border the coast nearly to Ras al Ghaf. The Sultan is represented by a Wali.

Anchorage may be obtained in the vicinity of Barka, about one mile offshore, in a depth of about 5 fathoms ($9^{\text{m}}1$), sand ; the depths 20 decrease regularly towards the coast, but the anchorage is unsheltered ; when in depths of less than 4 fathoms ($7^{\text{m}}3$) the bottom becomes visible. Within a distance of about 3 miles north-eastward of this anchorage there are irregular depths of between 5 and 9 fathoms ($9^{\text{m}}1$ and $16^{\text{m}}5$). In 1931, H.M.S. *Penzance* anchored in a depth of 25 $3\frac{1}{2}$ fathoms ($6^{\text{m}}4$), sand, with the fort bearing about 189° , distant $5\frac{1}{2}$ cables.

Suwādi point, about $7\frac{1}{2}$ miles north-westward of Barka castle, is a low sandy projection ; the date groves on the coast terminate about $1\frac{1}{2}$ miles south-eastward of the point.

30 Suwādi point and the off-lying islets were reported, in 1921, to lie about three-quarters of a mile farther northward than charted.

Jabal 'Add is the easternmost and largest island of a group of seven islets, named Jazāir as Suwādi, lying about 2 cables off Suwādi point (see view on chart 2837a) ; it is about 280 feet ($85^{\text{m}}3$) high, and table-topped, but there is a gap in it, and on its seaward side it is cliffy ; on its western side there is a small sandy bay. The channel between Suwādi point and Jabal 'Add dries from 2 to 3 feet ($0^{\text{m}}6$ to $0^{\text{m}}9$).

The six islets lying west-north-westward of Jabal 'Add are from 50 to 150 feet ($15^{\text{m}}2$ to $45^{\text{m}}7$) high, and precipitous ; Makbara, the 40 southern, has a tower on its south-eastern end, and there is also a tower on the summit of the western islet.

Between Makbara and the coast, there is a boat anchorage about half a mile in extent, with a depth of about 6 feet ($1^{\text{m}}8$), close to the islet, where native vessels anchor partly sheltered from the prevailing 45 winds. The entrance is close south-westward of the islet ; in the date season, this anchorage is crowded.

A small vessel might obtain anchorage, sheltered from the shamāl, in a depth of 4 fathoms ($7^{\text{m}}3$), close off the south-eastern side of Jabal 'Add, but she would be on a lee shore should a nashi come on.

50 Close outside Jazāir as Suwādi there are depths of from 4 to 5 fathoms ($7^{\text{m}}3$ to $9^{\text{m}}1$).

In 1934, H.M.S. *Fowey* obtained anchorage, in a depth of 5 fathoms ($9^{\text{m}}1$), fairly sheltered from the nashi, in a position about $1\frac{1}{2}$ miles westward of Jabal 'Add (*Lat.* $23^{\circ} 47' N.$, *Long.* $57^{\circ} 48' E.$).

Chart 10c.

Al Masna'a, about 8 miles westward of Suwādi point (*Lat. 23° 46' N., Long. 57° 48' E.*), is a village, in the middle of which there is a conspicuous fort, with a tower surmounted by a flagstaff. About one mile farther westward is Ash Shirs, a straggling village, in which there is a square ruined fort and some conspicuous trees. There are depths of 3 fathoms (5^m6) about one mile offshore. Al Awaid (Uwaid), Wudām (Wadam) and Khabbah are villages situated about 2 $\frac{1}{2}$, 5 $\frac{1}{2}$ and 8 miles, respectively, west-north-westward of Ash Shirs. Wudām may be identified by its mosque, a white square building, in its centre. There is a ruined fort at Khabba. In 1930, H.M.S. *Cyclamen* anchored off Wudām, in a depth of about 4 $\frac{1}{2}$ fathoms (8^m7), about 1 $\frac{1}{2}$ miles offshore. In 1934, H.M.S. *Fowey* anchored, in a depth of 6 fathoms (11^m0), with the ruined fort at Khabba bearing 198°, distant 1 $\frac{1}{2}$ miles.

As Suwaiq, about 10 $\frac{1}{2}$ miles west-north-westward of Ash Shirs, is a 15 partially walled town, in the middle of which there is a large conspicuous fort of a light yellow colour with a tower in the middle and on each of the four corners, the highest being surmounted by a flagstaff. (See view facing page 53). About 16 miles south-westward of the town, are two conspicuous hills, from 700 to 1,000 feet (213^m4 to 20 304^m8) high and of a light yellow colour, which show up well against the dark mountains inland when the sun is shining upon them. Outside the walls of the town are many mat huts. The Sultan is represented by a Wali.

A shoal extends from the coast in the vicinity of As Suwaiq, with 25 depths of 2 $\frac{1}{2}$ fathoms (4^m6) at 12 cables, and 3 $\frac{1}{2}$ fathoms (5^m9) at nearly 14 cables from the fort.

Ridda, about 2 miles westward of As Suwaiq, is the most important of several villages on the coast between As Suwaiq and Al Khadhra.

Al Khadhra is a village which extends along the coast for a distance 30 of about one mile from a position about one mile westward of Ridda. A fort, with two partly ruined towers, stands in the centre of Al Khadhra. From northward the towers of the fort are difficult to distinguish, particularly after noon, as from this direction only the ruined interiors are visible. Mud huts extend without a break between As Suwaiq and the northern end of Al Khadhra.

Discoloured water extending up to 2 $\frac{1}{2}$ miles offshore was observed in this vicinity, in 1934, by H.M.S. *Fowey*.

Anchorage was obtained, by H.M.S. *Cyclamen*, in October, 1930, in a depth of about 4 fathoms (7^m3) with the fort at Al Khadhra 40 bearing 182°, distant 9 cables.

Chart 2837a.

Al Khābūra (*Lat. 24° 00' N., Long. 57° 07' E.*), about 14 miles north-westward of Al Khadhra, is one of the principal towns on this coast, having a large trade with Bahrein (page 196) and the Shatt al 'Arab 45 (page 233). It may be identified by its northern part, which is of stone and mud instead of the usual mat structures; there is also a dilapidated fort, from the tower of which the Wali's flag is displayed. The depths off the town of less than 5 fathoms (9^m1), are very irregular. There are two conspicuous mountains lying about 20 and 25 miles, 50 respectively, south-westward of Al Khābūra; the northern one consists of a jagged ridge culminating at its north-eastern end in a triple-pointed, tooth-shaped peak, and the southern one is about 3,000 feet (914^m4) high, bluff, and wedge-shaped. At Kasbiya, a village close

Chart 748b.

Chart 2837a.

northward of Al Khābūra, there are two conspicuous forts, the southern of which has one tower and the northern two.

In 1937, anchorage was obtained, in a depth of 5 fathoms (9^m1), with the fort at Al Khābūra bearing 232°, 7½ cables.

About 6½ miles north-westward of Al Khābūra is Ras al Hayari, on which there is a village with two mud forts, the southern of which is square and has one tower, whereas the northern is square but has three towers. There are many huts between the coast and the date groves in rear. Majasaa, situated about 3 miles north-westward of Ras al Hayari, is a village in which there is a low fort with a single round tower at its north-western end. Dil, about one mile north-westward of Majasaa, has two low forts, about a quarter of a mile apart, with huts between them and the coast.

Umm al Jaarif, about one mile north-westward of Dil, is a small village which may be identified by a large square castellated tower of a darker colour than is usual on this coast. Makhailif, about one mile north-westward of Umm al Jaarif, is a small village with a large high fort, which is the most conspicuous mark on this part of the coast ; a large and conspicuous dark tree stands on the coast about half a mile south-eastward of the fort. As Saham, about 4 miles north-westward of Makhailif, is a large village, in which there is a low square fort, but owing to the date palms in rear it is difficult to identify. The fort is most easily distinguished on a west-south-westerly bearing ; it has two towers but they rise only a few feet above the rest of the building, and in front of it are two tall palms. About half a mile southward of the fort, is a tower, the top of which is in ruins ; it is visible from southward, but not from northward. The huts of the village extend along the coast for a distance of about one mile.

It was reported, in 1939, that the above information regarding the coast between Khābūrah and Sohār was incomplete and, in places, inaccurate ; it should therefore be used with caution.

In 1934, H.M.S. *Fowey* anchored, in a depth of 5½ fathoms (10^m1), with As Saham fort bearing 232°, distant 9 cables.

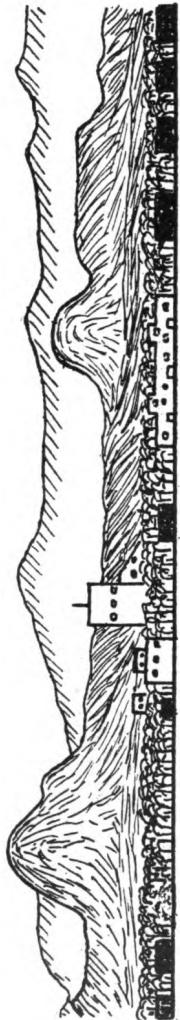
There are three villages between Saham and Sohār, one of which may be distinguished by a low fort with two towers situated about 4½ miles north-north-westward of As Saham fort.

Sohār.—Anchorage.—Sohār, about 13 miles north-westward of As Saham, is a walled town with a moat. In it is a fort, in which there are several large round trees and a square tower, about 110 feet (33^m5) high, surmounted by a flagstaff (*see* view facing this page). This tower is very conspicuous and is visible from seaward before the date groves, which are continuous in this locality, come into view ; it has been sighted at a distance of 12 miles. There are numerous mat huts outside the walls, in the date groves along the beach. The Sultan is represented by a Wali, who lives in the fort.

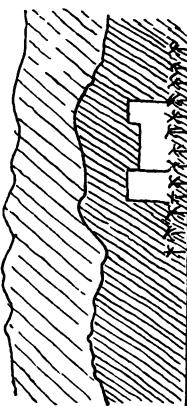
Sohār peak (*Lat.* 24° 17' *N.*, *Long.* 56° 33' *E.*), called by the Arabs Hūra Bargha, rises from the plain, in front of the main mountain ranges, about 12 miles south-westward of the town, to an elevation of 1,550 feet (472^m4) ; it is conical in shape, light brown in colour, and when visible is a good mark. *See* view on chart 2837a.

Anchorage may be obtained, in a depth of about 5 fathoms (9^m1), sand, about one mile off the town. The depths shoal gradually towards the coast. In 1931, H.M.S. *Triad* anchored in a depth of 4 fathoms

Chart 748b.



*Fort,
bearing 253°, $\frac{1}{4}$ miles.
Sohār town from east-north-eastward.
(Original dated 1927.)*



*Fujairah fort, bearing 258°, distant 10 miles.
(Original dated 1936.)*

Chart 2837a.

(7^m3), with Sohār fort bearing 220°, distant about 9 cables, and the northernmost date palm, 309°; and in the same year, H.M.S. *Penzance* anchored in a depth of 3 fathoms (5^m5), sand, with the fort bearing 250°, distant 7 cables. In 1937, the anchorage was approached with 5 Sohār peak in line with the fort, bearing 250°. Except in a calm sea, landing is bad owing to the surf on the sandy beach.

Coast.—Fāsiqa (Al Fasikah), about 6 miles north-westward of Sohār, is a straggling village with a fort on a slight rise at its northern end. In rear of the village is another fort with two conspicuous date 10 trees in front of it. There was a solitary bushy tree in 1911 on the beach northward of the village. Majis, the largest village between Sohār and Ash Shinās (*see* below), is situated about 2 miles north-westward of Fāsiqa; it is composed of mat huts and in the centre of the village is a long low inconspicuous fort with a square tower in its 15 north-eastern corner. Harmūl, about 3 miles north-westward of Majis, is a village of huts with a large building on the beach at its south-eastern end.

Al Liwa is situated about 2½ miles inland from Harmūl, and there is a large square fort with a square tower in the middle, which is 20 visible from seaward above the date trees, situated about 1½ miles north-eastward of it. The large building at Harmūl may be identified in low visibility for, when in line with the fort at Al Liwa, it bears 266°. The peak shown on chart 2837a, about 6½ miles south-westward of Al Liwa, is conspicuous and stands out well against the background 25 of mountains; it is of a darker colour than Sohār peak.

Ash Shinās.—**Anchorage.**—About 16 miles north-north-westward of Harmūl is Ash Shinās, a small town with a large fort, situated about 2½ miles southward of it. This fort is square and has a tower at its northern end. One side of the tower has fallen away; it is 30 conspicuous on southerly bearings, but difficult to distinguish when seen against the trees on northerly bearings. On north-westerly bearings, the fort presents a long low front, and on west-south-westerly bearings is visible at a considerable distance. Immediately in front of the fort is a large house, which is conspicuous during the 35 forenoon when it shows white with the sun shining on it. There is a square one-storeyed building about half a cable southward of the fort, the remainder of the town consisting of mud huts.

The town (*Lat.* 24° 44' N., *Long.* 56° 28' E.) shows up well against the background of trees, except from northward, from which direction 40 only the tower of the fort is visible. The town is governed by a Wali; the Muscat flag is displayed from a mast standing on the remains of a tower at the south-eastern corner of the fort. A bare stretch of sand extends about 2 miles southward from the town. A creek, the mouth of which is situated about 1½ miles northward of the town, 45 extends parallel with the coast along the whole of its frontage; the entrance, which may be identified by the break in the date palms, is conspicuous when bearing less than 300°. Dhows are usually to be seen in the creek, both northward and southward of the town.

Anchorage may be obtained, in a depth of about 5 fathoms (9^m1), 50 a short distance northward of the town, off the mouth of the creek. The depths shoal gradually to the coast. Landing can be effected at high water in the creek, but it is difficult with onshore winds owing to the surf and the shelving beach.

Chart 748b.

Chart 2837a.

In 1934, H.M.S. *Fowey* anchored southward of the town, in a depth of 5 fathoms (9^m1), with the fort bearing 258°, distant 9 cables.

Coast.—Anchorage.—Al Khadhrawain, about 5½ miles northward of Ash Shinās, consists principally of mud huts, and is backed by date palms. Seen from north-eastward, the fort, with a tower at its southern end, is in the centre, and in front of it is a low stone building with four arches. A light coloured stone tower, conspicuous when making Ash Shinās, stands at the southern end of the village, northward of a gap in the date palms.

Al Murair, about 13 miles north-north-westward of Ash Shinās, is a village with three large towers, two at its northern end and one at its southern end. About one mile southward of Al Murair, there is a large fort with two ruined towers in the vicinity of which there are several mat huts.

In 1934, H.M.S. *Fowey* anchored, in a depth of 5 fathoms (9^m1), with Al Murair fort bearing 210°, distant 11 cables.

Al Bātina coast ends about one mile northward of Al Murair and about 2 miles farther northward, Khatmat Milāha, a dark ridge of hills, slopes down to the coast.

ASH SHUMAILIYA.—Coast.—Anchorage.—Danger.—The coast of Ash Shumailiya (Shamailiyah), part of the principality of Shārja (see page 7), extends in a general northerly direction, for a distance of about 40 miles, from Khatmat Milāha to and including Dibba (Dibah). The coast consists of cliffs alternating with sandy bays, in which there are some villages and date groves; the coastal plain gradually becomes narrower until, at about 20 miles northward of Khatmat Milāha, the hills slope down to the coast.

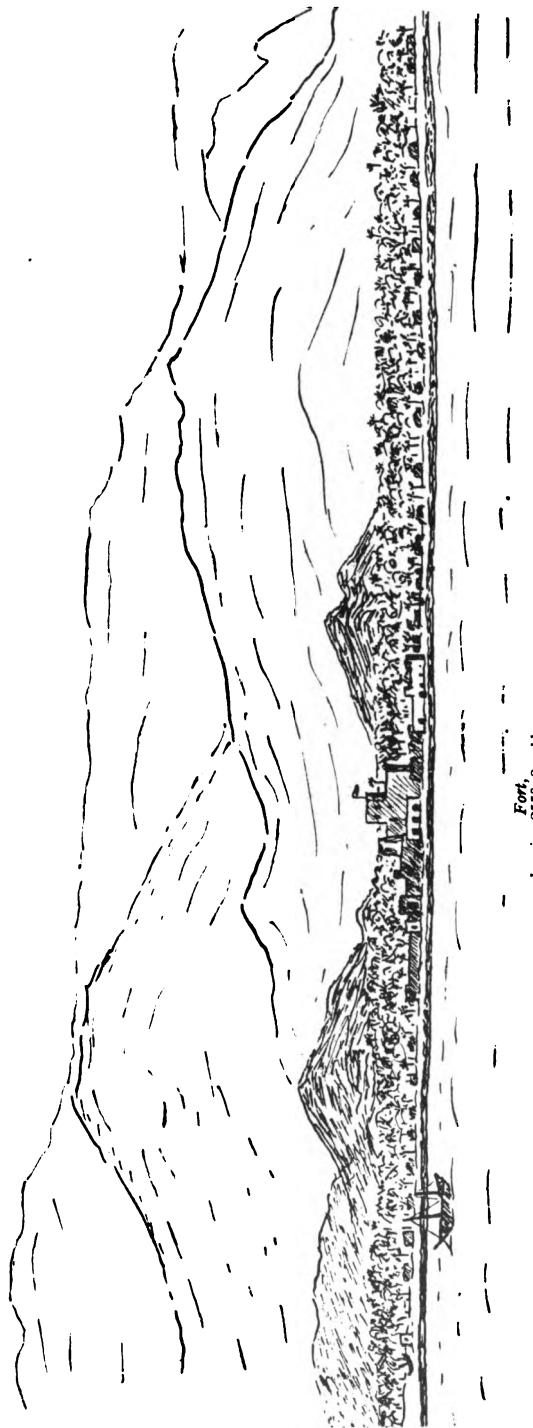
In Khōr al Kalba, 5 miles north-north-westward of Al Murair, there is a small village with a large round tower in the middle of it, and a fort; at the village there is a creek which may be entered by boats at high water. Sohār peak (page 62) appears triangular in shape when bearing less than 225°, and from off Khōr al Kalba it resembles a light-brown triangular island.

Għallia or Kalba village (*Lat.* 25° 04' N., *Long.* 56° 21' E.), about 3 miles northward of Khōr al Kalba, is a large village, in which there is a dilapidated fort, a large square building resembling a castle with a conspicuous square tower, which may be identified on west-north-westerly bearings at a distance of about 15 miles. (See view facing this page). From the village, a dense date grove extends northward along the coast for about 2½ miles, at which distance from the village there is an almost bare sandy patch.

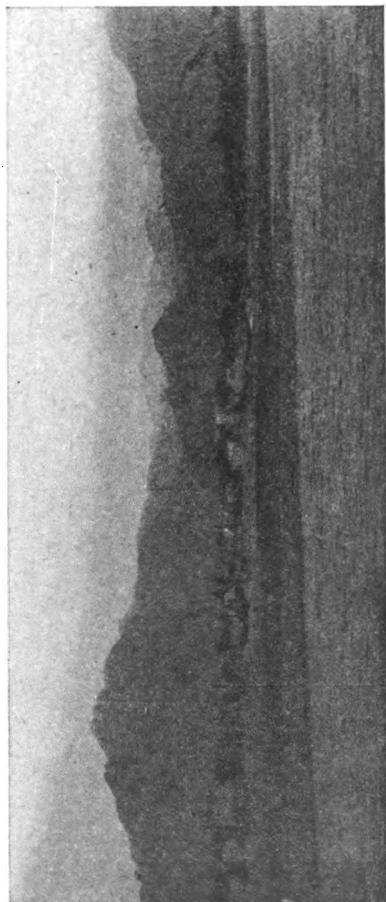
In 1932, H.M.S. *Fowey* anchored off the village, in a depth of 4½ fathoms (8^m2), with Ghälla fort bearing 280°, distant 4½ cables, and in 1934, she anchored, in a depth of 5 fathoms (9^m1), with the fort bearing 279°, distant 6 cables.

About 3 miles northward of Ghälla and about 1½ miles inland, is Fujaira, a small town consisting of huts standing amongst date trees, which extend from the bare sandy patch to a position about one mile northward of the town. On a small hill north-westward of the town there is a conspicuous fort with towers. (See view facing page 62). Għaraifa, situated about one mile southward of the fort, is a small village of mat huts between the date grove and the coast.

To face page 64.



Għallia village from east-north-eastward.
(Original dated 1928.)



Khor al Fakkān from eastward.

(Original dated 1914.)

Chart 2837a.

Anchorage may be obtained off Fujaira, in a depth of 5 fathoms ($9^{\text{m}1}$), about three-quarters of a mile offshore.

A shoal, over which there is a depth of 2 fathoms ($3^{\text{m}7}$), was reported by H.M.S. *Espiegle*, in 1910, in a position about $1\frac{1}{4}$ miles offshore ⁵ eastward of Fujaira ; between the shoal and the coast there are depths of 5 fathoms ($9^{\text{m}1}$).

As Saqamqam, about 3 miles northward of Fujaira, is a small village, the position of which may be identified by a round tower standing some distance inland. Close northward of As Saqamqam is a steep, ¹⁰ black, rocky point between which and Khōr al Fākkān, about 11 miles northward, there are hills estimated to be from 1,000 to 1,500 feet ($304^{\text{m}8}$ to $457^{\text{m}2}$) in height, conforming to the general topography of the coast northward. It was reported in 1938, that the natives at As Saqamqam were friendly. ¹⁵

About 5 miles northward of As Saqamqam is the village of Murba, where it was reported, in 1938, that the natives were friendly.

Good anchorage may be obtained off As Saqamqam, in a depth of 7 fathoms ($12^{\text{m}8}$), about three-quarters of a mile offshore, with the tower bearing 266° and Fujaira fort, 188° . ²⁰

Anchorage may be obtained eastward of Murba, in a depth of 10 fathoms ($18^{\text{m}3}$), about one mile offshore with the southern entrance point of Khōr al Fākkān bearing 000° .

Chart 2837a, plan of Khor Fakkan.

Khōr al Fākkān.—Anchorage.—On the southern shore of this ²⁵ sandy bay is a village with a large date grove (see view facing this page). Immediately southward of the bay is a hilly projection, from 1,000 to 2,000 feet ($304^{\text{m}8}$ to $609^{\text{m}6}$) high, off the north-eastern extremity of which lies Strat-al-Khor, a peaked islet about 240 feet ($73^{\text{m}2}$) high ; the channel between the islet and the point is about 2 cables wide, ³⁰ with depths in it of about 3 fathoms ($5^{\text{m}5}$). Khōr al Fākkān is entered between this islet and Ras Luluiya, a rocky point, situated about $1\frac{1}{4}$ miles north-westward.

Anchorage may be obtained, in a depth of 6 fathoms ($11^{\text{m}0}$), sand, about half a mile offshore north-north-eastward of the village, but ³⁵ it is open to the nashi.

It is reported that anchorage, which provides some shelter from the shamāl, may also be obtained, in a depth of about 4 fathoms ($7^{\text{m}3}$), in a position about 2 cables southward of Ras Luluiya (*Lat. $25^{\circ} 23' N.$, Long. $56^{\circ} 22' E.$*). ⁴⁰

About 3 cables eastward of the village and northward of a cliffy point, on which are two ruined towers, is the entrance to a small cove with a sandy beach at its head ; there are depths of 3 fathoms ($5^{\text{m}5}$) in the entrance, and within it small boats can find sheltered anchorage.

A conspicuous tower stands, at an elevation of 268 feet ($81^{\text{m}7}$), ⁴⁵ about 4 cables southward of the village.

The natives were reported to be friendly when visited by H.M.I.S. *Clive*, in 1938.

Chart 753.

Coast.—The coast for 4 miles northward of Ras Luluiya is low, ⁵⁰ sandy, and bordered with date groves, the mountains being only a short distance inland. Zubāra is a small village about $1\frac{1}{4}$ miles northward of Ras Luluiya. Al Badi, an islet, about 200 feet ($61^{\text{m}0}$) high, lies close offshore about $1\frac{1}{4}$ miles northward of Zubāra ; on the coast,

Chart 753.

at a short distance northward of the islet, is a village of the same name.

Sharam (Karam), Dhadna (Zadna), and Rūl Dhadna (Ruwul Zadna) ⁵ are three villages situated on the coast, respectively, about 2, 7 $\frac{1}{4}$, and 8 $\frac{1}{2}$ miles northward of Al Badi. This part of the coast consists of rocky points alternating with sandy bays, the mountains rising abruptly at a short distance inland.

Ras Dibba (Dibah), about 1 $\frac{1}{2}$ miles northward of Rūl Dhadna, is a ¹⁰ projecting point consisting of cliffs of moderate height; about half a mile northward of the point is an islet, the depths in the intervening channel being about 2 fathoms (3 m^7); there is a sand bluff in the cliffs about one mile westward of the point, which is conspicuous from northward but cannot be seen from eastward.

¹⁵ **Dōhat Dibba (Dibah).—Anchorage.**—This bay is entered between Ras Dibba and Ras Suwat, a rocky point, to which slope down three spurs of the mountain range, situated about 5 $\frac{1}{2}$ miles north-westward; it is open from north-north-east to east, and the depths decrease regularly from 15 fathoms (27 m^4), in the entrance, to the sandy beach.

²⁰ It was reported in 1931 that, between the sand bluff mentioned in the previous paragraph and the Shaikh's fort, about 3 $\frac{1}{2}$ miles west-north-westward, the shore of the bay recedes considerably more than is indicated on the chart.

Dibba (Dibah) town is situated at the head of the bay about 5 miles ²⁵ west-north-westward of Ras Dibba, and in it are two forts, only the southern of which can be seen from seaward. There are extensive date plantations in the valley southward of the town and all along the shore of the bay, which greatly obscure the view of the town from seaward. The Shaikh's fort, the southern one, is situated close to ³⁰ the beach in front of the date palms; it is small but conspicuous.

Anchorage was obtained by H.M.S. *Cyclamen*, in October, 1930, in a depth of about 5 $\frac{1}{2}$ fathoms (10 m^1), with the Shaikh's fort bearing 250°, distant 6 $\frac{1}{2}$ cables. In 1931, H.M.S. *Penzance* anchored in a ³⁵ depth of 4 fathoms (7 m^3), sand, with the fort bearing 230°, distant 4 cables.

Landing may be effected in fine weather on the sandy beach at the head of the bay.

The village of Al Karsha (*Lat. 25° 40' N., Long. 56° 17' E.*), about 2 $\frac{1}{2}$ miles northward of the Shaikh's fort at Dibba, is in the district of ⁴⁰ Ruūs al Jibāl, the boundary running inland from a position between the two villages.

For the coast of Ruūs al Jibāl, see page 90.

CHAPTER III

APPROACHES TO THE PERSIAN GULF FROM EASTWARD—COASTS OF LAS BÉLA, MAKRÂN, AND PERSIAN MAKRÂN, INCLUDING JĀSK—CAPE MONZE TO JĀSK.

Chart 38.

COAST OF LAS BÉLA.—The coast of Las Béla extends from the frontier of British India, at the mouth of the Hab river, northward and north-westward for about 50 miles, and thence westward for about 125 miles to Khôr Kalmat. It is chiefly an uninhabited wilderness of hills and cliffs, at the foot of which are swamps or desert plains. Very few supplies can be obtained from the villages.

Chart 41.

Cape Monze.—Light.—Off-lying dangers.—This cape (*Lat. 24° 50' N., Long. 66° 39' E.*), also known as Ras Muāri, is the western extremity of a sloping headland which rises to a pointed summit, at an elevation of about 460 feet (140^m2), about 17 miles westward of Manora point, at the entrance of Karachi harbour. *See* West Coast of India Pilot.

Jhil range, an offshoot of Kirthar range, is a ridge with a nearly level crest, but on which are some remarkable hummocks, the highest having an elevation of 776 feet (236^m5); it extends about 10 miles north-eastward from Cape Monze; for about the first 3 miles eastward of the cape, the hills slope down to the coast, but then turn inland and at about 5 miles farther eastward the coast becomes low. *See* view 20 on chart 41.

A light is exhibited, at an elevation of 162 feet (49^m4), from a black concrete tower, with white bands, 168 feet (51^m2) in height, situated on the coast about one mile south-eastward of Cape Monze.

A shoal spit, over which there is a depth of 3½ fathoms (6^m4), extends about one mile south-westward from the coast in the vicinity of the lighthouse. Nancowry shoal, over which there is a depth of 4 fathoms (7^m3), rock, lies about 1½ miles south-westward of the lighthouse; and a spit, over which the depths are from 6½ to 10 fathoms (11^m9 to 18^m3), extends about 1½ miles farther in that direction.

Foul ground extends about 6 cables offshore between the shoal spit and Cape Monze, and a 3-fathom (5^m5) patch lies on its edge west-south-westward of the cape.

Beauchamp reef, over which there is a depth of 5 fathoms (9^m1), coral, lies about 3½ miles westward of Cape Monze; foul ground, over

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Charts 38, 748b.

Chart 753.

at a short distance northward of the islet, is a village of the same name.

Sharam (Karam), Dhadna (Zadna), and Rūl Dhadna (Ruwul Zadna) ⁵ are three villages situated on the coast, respectively, about 2, 7 $\frac{1}{4}$, and 8 $\frac{1}{2}$ miles northward of Al Badi. This part of the coast consists of rocky points alternating with sandy bays, the mountains rising abruptly at a short distance inland.

Ras Dibba (Dibah), about 1 $\frac{1}{2}$ miles northward of Rūl Dhadna, is a ¹⁰ projecting point consisting of cliffs of moderate height; about half a mile northward of the point is an islet, the depths in the intervening channel being about 2 fathoms (3 m^7); there is a sand bluff in the cliffs about one mile westward of the point, which is conspicuous from northward but cannot be seen from eastward.

¹⁵ **Dōhat Dibba (Dibah).—Anchorage.**—This bay is entered between Ras Dibba and Ras Suwat, a rocky point, to which slope down three spurs of the mountain range, situated about 5 $\frac{1}{2}$ miles north-westward; it is open from north-north-east to east, and the depths decrease regularly from 15 fathoms (27 m^4), in the entrance, to the sandy beach.

²⁰ It was reported in 1931 that, between the sand bluff mentioned in the previous paragraph and the Shaikh's fort, about 3 $\frac{1}{2}$ miles west-north-westward, the shore of the bay recedes considerably more than is indicated on the chart.

Dibba (Dibah) town is situated at the head of the bay about 5 miles ²⁵ west-north-westward of Ras Dibba, and in it are two forts, only the southern of which can be seen from seaward. There are extensive date plantations in the valley southward of the town and all along the shore of the bay, which greatly obscure the view of the town from seaward. The Shaikh's fort, the southern one, is situated close to ³⁰ the beach in front of the date palms; it is small but conspicuous.

Anchorage was obtained by H.M.S. *Cyclamen*, in October, 1930, in a depth of about 5 $\frac{1}{2}$ fathoms (10 m^1), with the Shaikh's fort bearing 250°, distant 6 $\frac{1}{2}$ cables. In 1931, H.M.S. *Penzance* anchored in a depth of 4 fathoms (7 m^3), sand, with the fort bearing 230°, distant ³⁵ 4 cables.

Landing may be effected in fine weather on the sandy beach at the head of the bay.

The village of Al Karsha (*Lat. 25° 40' N., Long. 56° 17' E.*), about 2 $\frac{1}{2}$ miles northward of the Shaikh's fort at Dibba, is in the district of ⁴⁰ Ruūs al Jibāl, the boundary running inland from a position between the two villages.

For the coast of Ruūs al Jibāl, see page 90.

CHAPTER III

APPROACHES TO THE PERSIAN GULF FROM EASTWARD—COASTS OF LAS BĒLA, MAKRĀN, AND PERSIAN MAKRĀN, INCLUDING JĀSK—CAPE MONZE TO JĀSK.

Chart 38.

COAST OF LAS BĒLA.—The coast of Las Bēla extends from the frontier of British India, at the mouth of the Hab river, northward and north-westward for about 50 miles, and thence westward for about 125 miles to Khōr Kalmat. It is chiefly an uninhabited wilderness of hills and cliffs, at the foot of which are swamps or desert plains. Very few supplies can be obtained from the villages.

Chart 41.

Cape Monze.—Light.—Off-lying dangers.—This cape (*Lat. 24° 50' N., Long. 66° 39' E.*), also known as Ras Muāri, is the western extremity of a sloping headland which rises to a pointed summit, at an elevation of about 460 feet (140^m2), about 17 miles westward of Manora point, at the entrance of Karachi harbour. *See* West Coast of India Pilot.

Jhil range, an offshoot of Kirthar range, is a ridge with a nearly level crest, but on which are some remarkable hummocks, the highest having an elevation of 776 feet (236^m5); it extends about 10 miles north-eastward from Cape Monze; for about the first 3 miles eastward of the cape, the hills slope down to the coast, but then turn inland and at about 5 miles farther eastward the coast becomes low. *See* view 20 on chart 41.

A light is exhibited, at an elevation of 162 feet (49^m4), from a black concrete tower, with white bands, 168 feet (51^m2) in height, situated on the coast about one mile south-eastward of Cape Monze.

A shoal spit, over which there is a depth of 3½ fathoms (6^m4), extends about one mile south-westward from the coast in the vicinity of the lighthouse. Nancowry shoal, over which there is a depth of 4 fathoms (7^m3), rock, lies about 1½ miles south-westward of the lighthouse; and a spit, over which the depths are from 6½ to 10 fathoms (11^m9 to 18^m3), extends about 1½ miles farther in that direction.

Foul ground extends about 6 cables offshore between the shoal spit and Cape Monze, and a 3-fathom (5^m5) patch lies on its edge west-south-westward of the cape.

Beauchamp reef, over which there is a depth of 5 fathoms (9^m1), coral, lies about 3½ miles westward of Cape Monze; foul ground, over

5

30

Charts 38, 74b.

Chart 41.

which there are depths of from 7 to 9 fathoms (12^m8 to 16^m5), extends about half a mile south-south-eastward and one mile north-north-westward from the reef.

5 Churma island, about 4 miles north-westward of Cape Monze, is about 580 feet (176^m8) high; from southward, its almost precipitous light-coloured hills appear to rise to a peak, but from westward, it looks like a flat-topped hill with sloping sides. The island is steep-to, barren, and uninhabited.

10 Anchorage may be obtained, in a depth of 5 fathoms (9^m1), sand, about 2 cables offshore, with the summit of Churma island bearing about 225° .

On the northern side of Cape Monze is a small bay with a sandy beach to which a valley descends between the Jhil range and some 15 detached hills, about 580 feet (170^m7) high. The seaward side of these hills, which extend to the mouth of the Hab river, is cliffy. Foul ground extends about one mile offshore for over 2 miles northward of Cape Monze.

20 Southward of Cape Monze, in depths greater than 20 fathoms (36^m6), and eastward of it, in depths greater than 10 fathoms (18^m3), the bottom is everywhere soft.

Chart 38.

Sonmiāni bay.—**Dangers.**—This bay is entered between Cape Monze and Ras Kachari (Kuchar), about 60 miles north-westward.

25 For 20 miles northward of Cape Monze the shore of the bay is indented between rocky points, thence north-westward and westward it becomes sandy and covered with low jungle, with sand hills in places.

Pab mountains rise on the northern bank of the Hab river, about 10 miles north-eastward of Cape Monze (*Lat. $24^\circ 50' N.$, Long. $66^\circ 39' E.$*) and extend north-eastward and northward, gradually increasing in elevation to over 3,000 feet (914^m4). Westward of these mountains is a plain, about 35 miles wide, which extends to the foot of the Haro range. This plain is drained by the Purali river which flows through a swamp into the sea at the head of the bay. The Haro range, which 35 is of light colour and irregular outline, trends north-north-eastward from the northern shore of the bay, and at its southern end attains an elevation of about 3,150 feet (980^m1).

The town of Sonmiāni is the seaport of Bēla, and stands on the eastern bank, about 4 cables within the entrance of Purali river. The 40 town is difficult to identify from seaward on account of its low position and dull appearance. Bēla, the capital of the State of Las Bēlas, stands in the valley, about 65 miles by road northward of Sonmiāni.

Hab river flows into the sea about $3\frac{1}{2}$ miles north-north-eastward of Cape Monze. There is no fresh water within several miles of its mouth, 45 except during freshets. The rocky hills on its southern side end about one mile within its mouth, above which there is a plain on each side of the river. The northern side of the entrance of the river is low, and a sandy spit extends nearly across the channel. A small isolated rocky hill stands on the northern side, a short distance inland.

50 The channel of the Hab river is tidal, and nearly dries; it has depths in it of 9 feet (2^m7) at high water, and, usually, there are breakers across the entrance. The channel outside high-water mark shifts, but is practicable for a ship's boat. The tidal influence does not extend more than about 2 miles inside the mouth of the river.

Chart 748b.

Chart 38.

The vicinity of the mouth of the Hab has only been partially examined.

For about 3 miles northward of the northern entrance point of the river, the coast is low ; about 2 miles farther northward is Chir Churna, a detached, square, rocky hill, about 100 feet ($30^{\text{m}} 5$) high, joined to the mainland by a low sandy isthmus. 5

A shoal, over which there is a depth of $1\frac{1}{2}$ fathoms ($3^{\text{m}} 2$), lies about $1\frac{1}{2}$ miles westward of the northern entrance point of the Hab river, and a shoal, with a depth of 3 fathoms ($5^{\text{m}} 5$), lies about $3\frac{1}{2}$ miles northward of the same point. About $1\frac{1}{2}$ miles farther northward, and about one mile offshore, is a sunken rock. There are depths of from 4 to 6 fathoms ($7^{\text{m}} 3$ to $11^{\text{m}} 0$) round both the 3-fathom ($5^{\text{m}} 5$) shoal and the sunken rock. 10

A low rocky islet lies about three-quarters of a mile north-westward of Chir Churna, with depths of 7 fathoms ($12^{\text{m}} 8$) close seaward of it, and 5 fathoms ($9^{\text{m}} 1$) between it and the land. 15

Within a distance of about 6 miles north-north-eastward of Chir Churna are three small bays separated by high rocky points. Inland of the southernmost of these bays are backwaters, one of which has an entrance close eastward of Chir Churna ; from these backwaters, the ground rises abruptly to the southern part of the Pab range. For 3 miles northward of Chir Churna the coast is hilly, thence to the entrance of Sonmiāni harbour, about 22 miles north-north-westward of Chir Churna (*Lat. $25^{\circ} 01' N.$, Long. $66^{\circ} 42' E.$*), the coast is bordered by sand hillocks covered with tufts of grass and small bushes. 20
25

Chart 38, plan of Sonmiyāni harbour.

Sonmiāni harbour.—The entrance to Sonmiāni harbour is nearly 2 miles wide, and on the bar there is a depth of about $1\frac{1}{2}$ fathoms ($2^{\text{m}} 3$), though in the channel inside there are depths of from $3\frac{1}{2}$ to 6 fathoms ($5^{\text{m}} 9$ to $11^{\text{m}} 0$) close to the eastern entrance point where its width is about $1\frac{1}{2}$ cables. On approaching the town the depths in the channel decrease considerably. 30

A shoal flat, on which the sea breaks heavily, extends nearly $2\frac{1}{2}$ miles outside the entrance, and through it winds the entrance channel ; there are depths of 4 fathoms ($7^{\text{m}} 3$) close to the outer edge of the shoal. 35

The eastern entrance point is composed of sandy hillocks, thinly covered with tamarisk bushes, and between it and the town is a mud flat, which mostly dries, and over which the Windar (Vindar) river, flowing south-westward, discharges during floods. 40

The western entrance point consists of low bare sand hills.

Westward of the harbour is a vast swamp, which extends within the coastal sand hills almost to the foot of the Haro range, and at high water is partly covered. During heavy rains, the Purali river discharges into the northern part of the swamp, though, being dammed about 20 miles inland, its waters are usually absorbed in irrigation. 45

The harbour is only used by native craft. Vessels wishing to communicate should anchor off the bar, in a depth of not less than 5 fathoms ($9^{\text{m}} 1$), with Churna island bearing about 173° .

Caution.—As the information given above is from a survey made many years ago, great care should be taken when approaching this vicinity. 50

Chart 38.

Northern shore of Sonmiāni bay.—Anchorage.—The northern

Chart 748b.

Chart 38.

shore of Sonmiāni bay from the western entrance point of Sonmiāni harbour is low with sand hillocks, on which are tufts of grass, to the Haro range, about 24 miles westward, whence again it is low to Chandragup (Darya cham), 13 miles farther westward. The depths offshore are regular, and the coast can be approached into a depth of 6 fathoms ($11^{\text{m}0}$), there being depths of 3 fathoms ($5^{\text{m}5}$) from one to 2 miles offshore.

Phor (Pur) river enters the sea about 33 miles westward of Sonmiāni harbour; its mouth is a small salt-water creek, into which, during the rains, flows the river which drains the valley westward of the Haro range.

Anchorage could be obtained, in a depth of 5 fathoms ($9^{\text{m}1}$), in the bay westward of the mouth of Phor river, but a depth of $3\frac{1}{2}$ fathoms ($6^{\text{m}4}$) is charted about $2\frac{1}{2}$ miles offshore, nearly 6 miles south-westward of the mouth of the river.

Chandragup (*Lai. $25^{\circ} 26' N.$, Long. $65^{\circ} 50' E.$*), the eastern of a detached group of low hills near the middle of the southern part of a plain extending westward from the Haro range for about 30 miles, is situated about 2 miles inland, $4\frac{1}{2}$ miles west-north-westward of the mouth of Phor river; it consists of several white conical hillocks, the highest of which attains an elevation of about 300 feet ($91^{\text{m}4}$).

Ras Kachari is the south-eastern extremity of some low cliffs, above which rise the detached group of hills, of which Chandragup is the easternmost.

25 Tidal streams.—In Sonmiāni bay, the tidal streams are weak and set eastward and westward, following the curve of the land.

Coast.—Aspect.—Danger.—Between the Haro range and Ras Malān, about 30 miles westward of Ras Kachari, the coast appears from seaward as a succession of rugged mountains, generally of light colour, with lower whitish-clay peaks, called "shur" by the natives, in front of them. Jabal Hinglāj, 20 miles west-north-westward of Ras Kachari, and 8 miles inland, is about 3,500 feet ($1006^{\text{m}8}$) high, and wedge-shaped (*see* view on chart 38). Gurangatti (Gorangati), 8 miles farther west-north-westward, with a valley between, is a conspicuous square-topped mountain, about 3,800 feet ($1158^{\text{m}2}$) high, resembling a castle with bastions, its sides appearing almost vertical. From Jabal Hinglāj, the Halā (Hara) range, of irregular outline and with lower hills in front, trends east-north-eastward from 8 to 12 miles inland, until about 5 miles from the Haro range, where it turns north-north-eastward, parallel with the latter.

Westward of Ras Kachari, the coast is low. Jabal Ghurāb, situated near the coast about $2\frac{1}{2}$ miles westward of Ras Kachari, is small and oblong.

A shoal bank extends about $2\frac{1}{2}$ miles offshore in the vicinity of Jabal Ghurāb, with depths of 6 fathoms ($11^{\text{m}0}$) close to its outer edge.

Jazirat Chahārdam, on the coast about 3 miles westward of Jabal Ghurāb, consists of some rocks from 20 to 30 feet ($6^{\text{m}1}$ to $9^{\text{m}1}$) high, and somewhat higher than the coast in the vicinity; there is good landing for a boat inside these rocks. For about 12 miles westward of the rocks as far as Jabal Hab, a ridge of hills, about 250 feet ($76^{\text{m}2}$) high, slopes down to the coast and forms a small point about 2 miles farther westward.

Hingol (Hingor) river, the mouth of which is situated about 2 miles eastward of Jabal Hab, can be entered at high water by small craft

Chart 748b.

Chart 38.

with a draught of 6 feet ($1^{\text{m}}8$). The river, the bed of which dries in many places, brings down quantities of driftwood during freshets ; it winds round the eastern side of Jabal Hinglāj, and through a gap in Jabal Hab. Eastward of the river, the plain within the coastal sand hills 5 is swampy after rain.

Westward of Jabal Hab, low sand hills border the coast for about 12 miles to the cliffs of Ras Malān (*Lat. 25° 19' N., Long. 65° 13' E.*)

Ras Malān, about 14 miles west-south-westward of Jabal Hab, is a prominent bluff with a steep face on its seaward side and a level 10 summit of clay capped with limestone. The highest part, about 4 miles northward of the bluff, attains an elevation of about 2,050 feet ($624^{\text{m}}8$), with cliffs rising to it abruptly from the sea, there being no beach. Great masses of clay, detached from the mountain side, frequently fall. From seaward, the bluff appears as a long light-coloured 15 tableland ending in cliffs ; between it and Jabal Hinglāj is a confused mass of lower hills and shur. There is a depth of 4 fathoms ($7^{\text{m}}3$) about one mile south-eastward of the bluff. The locality is uninhabited.

Anchorage.—Anchorage may be obtained in the bay eastward of Ras Malān, in a depth of about 4 fathoms ($7^{\text{m}}3$), about one mile offshore, 20 with Gurangatti bearing about 000° , and Ras Malān 230° , but the depths appear to shoal close inshore of this position.

Coast.—For a distance of about 19 miles westward of Ras Malān the coast is cliffy ; thence it is low and sandy for about 15 miles to Ormāra isthmus, with a plain inland. The high land westward of Ras 25 Malān, known as Batt, is intersected 7 miles from the point by the Hor Batt, a salt-water lagoon, with a sandy bar between it and the sea, into which a great water-course runs through a gorge in the mountains. The mountains become lower westward of the lagoon.

The plain westward of Batt extends about 10 miles inland to the 30 Tālo (Tallu) hills, a range running eastward to Gurangatti in several ridges nearly parallel with the coast. On this plain, northward of the eastern extremity of Ras Ormāra, and 4 miles inland, is Chandra kūp, a conspicuous white cone, about 600 feet ($182^{\text{m}}9$) high, with a mud crater. 35

Khōr Maniji, 20 miles westward of Ras Malān, is shallow, but, for a short time after rains, it becomes the mouth of a small river. Khōr Gurād, about 5 miles farther westward, is similar ; both are visited by native boats.

Ras Ormāra.—This mountainous peninsula is 1,400 feet ($426^{\text{m}}7$) 40 high ; the top slopes gently eastward and southward, and ends on all sides in cliffs ; from southward, the peninsula appears wedge-shaped. It is of similar geological formation to the other ranges on the coast, and is only accessible with great difficulty. The sandy isthmus connecting the middle of the peninsula to the mainland extends about 45 5 miles southward from the coast ; on its southern part is Ormāra village. Northward of the village, there are high sand hills in the middle of the isthmus, but the beach on each side is low.

Two rocks were reported, in 1921, to lie about $3\frac{1}{2}$ cables south-westward of the south-western extremity of Ras Ormāra. 50

Ormāra village, situated on the eastern beach of the isthmus, about one mile from the cliffs, consists of a few stone houses and mosques, and some mat huts.

Ormāra is connected to the general telegraph system.

Chart 748b.

Chart 38.

Anchorages.—Demi zar or Ormāra East bay, on the eastern side of Ormāra isthmus, is the usual anchorage for vessels ; it has a sandy bottom, except near the cliffs, and is shallow off the village. Anchorage may be obtained, in a depth of $3\frac{1}{2}$ fathoms ($6^{\text{m}}4$), about $2\frac{1}{2}$ miles from the village, with the eastern extremity of Ras Ormāra, which is about 500 feet ($152^{\text{m}}4$) high, bearing 151° , and the telegraph office, situated about one mile westward of the village, bearing about 261° . The depths shoal regularly when entering the bay, and the eastern bluff point may be approached to a distance of about half mile. The beach dries a long way off the village, making landing inconvenient at low water ; a shoal extends from the northern side of the cliffs of Ras Ormāra (*Lat. $25^\circ 10' N.$, Long. $64^\circ 37' E.$*).

The bay is open to easterly winds, which may blow strongly. During the South-west monsoon there is usually at least one blow from eastward, with rain, which is not of long duration ; Padi zar is then the best anchorage, though communication with the shore is more tedious. Native craft appear always to ride out these breezes. In the South-west monsoon, and at any time after April, a long swell sets round the point into Demi zar, raising a surf on the beach and causing vessels at anchor to roll heavily.

The tidal streams in the bay are weak, and set north-eastward and south-westward following the curve of the land.

Padi zar or Ormāra West bay, on the western side of Ormāra isthmus, is entered between the western extremity of Ras Ormāra and the high cliffs of Ras Sakanni, about 8 miles west-north-westward. The shores are low and sandy ; at its head, and about 5 miles from the village, is a small rocky hill near the coast. The bay is seldom visited, being open south-westward and westward. There are depths of less than 3 fathoms ($5^{\text{m}}5$) within 3 miles of the eastern and northern shores of the bay. The anchorage is with the western extremity of the peninsula bearing about 180° .

Meteorological table.—See page 39.

Coast.—Between Ras Sakanni and Ras Basöl (Basul), about 10 miles west-north-westward, the coast is bordered by continuous cliffs, about 800 feet ($243^{\text{m}}8$) high, of light colour and irregular outline, without any marked peak ; the cliffs are the sea face of the Kamgar hills, between which and the Tālo hills, is a wide plain. Ras Basöl lies at the western end of these cliffs. The bay entered between Ras Basöl and Khör Kalmat, about 10 miles west-north-westward, is shallow, with a low sandy shore.

About 2 miles north-westward of Ras Basöl is the mouth of Basöl river ; this river flows from the interior between the Tālo and Tälär ranges ; the land in the vicinity of its mouth, is swampy and very low.

The Tälär hills trend east-north-eastward from about 10 miles north-westward of the entrance of Khör Kalmat, and approach the western part of the Tālo hills.

In Khör Kalmat, the largest inlet on the coast, there are depths of 5 and 6 fathoms ($9^{\text{m}}1$ and $11^{\text{m}}0$) ; it is of considerable width, but on the bar there is a depth of only 2 feet ($0^{\text{m}}6$). The entrance is rendered difficult by rocks lying upwards of one mile outside the bar, and the tidal streams in the entrance are strong. The land near the entrance is very low, with mangrove swamps. Native craft of 9 feet ($2^{\text{m}}7$) draught are reported to enter the inlet by the eastern of the two

Chart 748b.

Chart 38.

channels over the bar. Inside the bar there are depths of from 4 to 7 fathoms ($7^{\text{m}}3$ to $12^{\text{m}}8$). At some distance inside the inlet are four creeks, which, beyond the range of the tides, form the mouths of water-courses.

Tad, situated on the western side of the khōr, contains a few houses, the only permanent habitations in the neighbourhood.

COAST OF MAKRĀN.—The coast of Makrān extends in a general westerly direction from Khōr Kalmat (*Lat. 25° 19' N., Long. 64° 04' E.*) to the frontier of Persian Makrān, a distance of nearly 10 140 miles. Very few supplies can be obtained from the villages.

For 12 miles westward of Khōr Kalmat the coast is low, the coastal bank, with depths of less than 3 fathoms ($5^{\text{m}}5$), extending about 3 miles offshore; thence, gradually becoming higher, the coast is backed for the next 18 miles by a number of shur; thence to near Pasni, about 15 3 miles north-westward of Ras Jaddi, situated 30 miles west-south-westward of Khōr Kalmat, the coast is barren. There is a small boat harbour about 25 miles westward of Khōr Kalmat. A rocky spit, with a depth of 4 fathoms ($7^{\text{m}}3$) close off it, extends about half a mile eastward from Ras Jaddi.

Shādi khōr is a large shallow creek with swampy banks, the entrance of which is situated about 2 miles north-eastward of Pasni; on the southern side of the mouth of the creek is a projecting point, and drying banks extend about 6 cables offshore. A river flows into the head of the khōr. Boats can enter the khōr at high water.

Local weather.—For weather on the coast of Makrān *see* page 27.

Off-lying island and dangers.—Astola or Astalū island, about 19 miles east-south-eastward of Ras Jaddi, is 280 feet ($79^{\text{m}}2$) high at its western end, table-topped and bordered by cliffs all round. The cliffs are vertical, except on the northern side of the island, where, about 30 the middle, there is a little sandy point, and, at the north-western corner, where there is a sandy spit and a small boat harbour.

There are rocky ledges off both ends and some detached rocks above water along the southern coast, but all are within 2 cables of the cliffs.

Astola island is covered with a luxuriant growth of rank grass and 35 low shrubs, and abounds with small venomous snakes, called "gar" by the natives.

The island is a place of pilgrimage for the Hindus and Pasni Meds, who land at the north-eastern point of the island, whence the ascent is steep and tortuous.

Webb bank, with a least known depth of $3\frac{1}{2}$ fathoms ($6^{\text{m}}4$), rock, and which breaks during the South-west monsoon, lies about 5 miles south-south-eastward of Astola island. Sail rock, known to the local fishermen as Gurāb, lies 7 cables southward of the middle of the southern side of Astola island; it is 20 feet ($6^{\text{m}}1$) high, steep-to, and appears 45 like a boat under sail; vessels should not pass between the rock and the island.

The channel between Sail rock and Webb bank is apparently clear, but the bottom is uneven, breakers were reported, in 1922, and there are depths of 5 fathoms ($9^{\text{m}}1$), rocks, in places.

Breakers were observed, in 1922, in two positions about 6 miles westward of Webb bank. A wide berth should, therefore, be given to this locality.

Chart 748b.

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Breakers were observed, in 1922, in two positions about 6 miles westward of Webb bank. A wide berth should, therefore, be given to this locality.

Chart 38.

Two shoals, over each of which there is a depth of $1\frac{1}{2}$ fathoms ($2^{\text{m}}7$), lie close together with their outer edges about $1\frac{1}{2}$ miles northward of Astola island ; the western shoal is connected to the island by a bank and the eastern shoal nearly so ; their northern sides are steep-to, and there is no passage between them and the island except for boats. A shoal, over which there is a depth of $2\frac{1}{2}$ fathoms ($4^{\text{m}}6$), lies nearly 2 miles north-eastward of the eastern end of the island, and is steep-to ; a $2\frac{1}{2}$ -fathom ($4^{\text{m}}1$) patch lies between it and the island.

There is a clear channel, about 7 miles wide, between the shoals extending southward from the mainland and those northward of Astola, with depths in it of from 5 to 8 fathoms ($9^{\text{m}}1$ to $14^{\text{m}}6$), sand, rock, and shells.

15 A 5-fathom ($9^{\text{m}}1$) patch lies about 8 miles east-south-eastward of Ras Jaddi (*Lat. $28^{\circ} 13' N.$, Long. $63^{\circ} 30' E.$*).

If proceeding northward of Astola, which should not be done at night, except under favourable conditions, vessels should keep well clear of it to avoid the outlying shoals.

20 Pasni.—Anchorage.—Pasni, situated on the low western shore of the bay northward of Ras Jaddi, is of considerable importance owing to its proximity to Turbat, the headquarters of the Makrān administration, situated about 50 miles north-north-westward.

A small fort, two mosques, and a bungalow, which serves as the post and telegraph office, are the only permanent buildings, the rest of the town consisting of mat huts.

It is the seaport of Kulānch, a district of Makrān, extending about 120 miles westward from Khōr Kalmat, and is the headquarters of the Nāib of Kulānch.

30 With the exception of a few date palms southward of the town, there is no vegetation in the neighbourhood ; south-westward of the town is a mass of high white sand hills, and northward of these, are a number of shur.

Wool, ghi, cotton, dates, and mats are exported.

35 Anchorage may be obtained, in a depth of about $3\frac{1}{2}$ fathoms ($6^{\text{m}}4$), sand; about $1\frac{1}{2}$ miles offshore, with the town bearing 270° , and Ras Jaddi about 194° , or farther out in depths of 4 fathoms ($7^{\text{m}}3$).

After the month of April, there is considerable surf on the shore of the bay rendering landing difficult.

40 Meteorological table.—See page 40.

Coast.—Between Ras Jaddi and the point about $1\frac{1}{2}$ miles southward, on which is Jabal Zarain, is a small bay, about $1\frac{1}{2}$ cables inland of which is a group of clay hills of fantastic shape about, 150 feet ($45^{\text{m}}7$) high.

45 Jabal Zarain is about 400 feet ($121^{\text{m}}9$) high, brown in colour, and conspicuous ; its shape is similar to that of a barn, especially when seen from westward or eastward ; from southward, it appears as a long notched ridge with sloping ends : at a distance, it appears detached as the land round it is low ; it is steep-to, and there are depths of from 4 to 5 fathoms ($7^{\text{m}}3$ to $9^{\text{m}}1$) about one mile offshore. See view on chart 38.

Between a point about 10 miles westward of Jabal Zarain, and Ras Shamāl Bandar, 13 miles westward, the coast, which forms a bay, is low and the coastal bank extends about $1\frac{1}{2}$ miles offshore. Small vessels sometimes take shelter from westerly winds in the western part

Chart 748b.

Chart 38.

of the bay. The coast appears to be bordered by desert, but a short distance inland it is fertile in places.

Chakuli kūh, a range of mountains about 1,400 feet (426^m7) high, is a westerly continuation of the Tālār hills and lies, parallel with the coast, from 8 to 10 miles inland; the western part, separated from the eastern by the Save (Sawur) river, is known as Kūh-i-Darām (see below).

Ras Shamāl Bandar is a bluff, and is the first high land near the coast westward of Jabal Zarain; it should not be approached into depths of less than 6 fathoms (11^m0), as a reef, the outer edge of which is steep-to, extends about one mile offshore.

Ras Shāhid (*Lat. $25^{\circ} 12' N.$, Long. $62^{\circ} 59' E.$*) lies about $5\frac{1}{2}$ miles west-south-westward of Ras Shamāl Bandar; the coast between these two points and also between the former and Ras Kappar, about $13\frac{1}{2}$ miles westward, rises to a long jagged ridge of precipitous white clay hills, from 400 to 500 feet (121^m9 to 152^m4) high, a short distance inland with low ground behind them; except in a few places, at low water there is no beach on this stretch of coast. Between 6 and 9 miles westward of Ras Shāhid, there are three gaps in the hills, through one of which the Save river flows into a large salt-water creek.

Ras Kappar (Kapar) is the southern extremity of a table-topped hill with bluff ends, nearly 800 feet (243^m8) high, situated at the western end of, and partly detached from, the hills extending westward from Ras Shāhid. There are depths of 3 fathoms (5^m5) about 3 cables from the point. Kappar is a small village close to the coast near the point.

Mukh, about 17 miles north-westward of Ras Kappar, is a conspicuous peak 2,924 feet (891^m2) high, and Barn peak, the summit, 5 miles eastward of it, is 3,152 feet (960^m7) high. Lower clay hills rise in front of these mountains.

Dimak kūh, 6 miles westward of Ras Kappar, and a short distance inland, is small, of darker colour than the other hills in the locality, and has several little paps on its summit.

Between Ras Kappar and the point on which lies Jabal Sur (Sar), about 15 miles westward, the coast is sandy and rises to low hills, principally shur; between Jabal Sur and the mainland northward of it there is a small sandy bay. The coastal bank between Ras Káppar and Jabal Sur extends from half a mile to one mile offshore. Karawat river, about 9 miles westward of Ras Kappar, is only a small stream, and is the eastern boundary of the Gwādar territory.

Kūh-i-Darām is a range of mountains lying parallel with the coast, about 12 miles inland, decreasing in height westward, where it ends abruptly in Gar-i-kūh (Garr), a remarkable notch or rather two great vertical steps descending from a height of 1,493 feet (455^m0), about 20 miles west-north-westward of Jabal Sur, and forming a good landmark. A wide plain extends from the foot of Kūh-i-Darām to Jabal Mehdi (page 76), and to the root of the isthmus of Gwādar; in this plain, which is cultivated, are some scattered villages.

Sajidi (Saiji) kūh is the summit of a mountain range, extending in an easterly and westerly direction about 20 miles inland, the peaks of which there attain an elevation of 3,126 feet (952^m8).

Chart 38, plan of Gwādar bay.

Jabal Sur (*Lat. $25^{\circ} 13' N.$, Long. $62^{\circ} 28' E.$*) is a small wedge-shaped white clay hill, 560 feet (170^m7) high, rising steeply with a vertical cliff

Chart 748b.

Chart 38, plan of Gwādar bay.

at its eastern end ; the isthmus connecting it to the mainland is low and sandy. See view on chart 38.

Jabal Mehdi, a precipitous white clay ridge with vertical cliffs on its southern side, rises abruptly from the plain at the root of the isthmus and extends westward for about 4 miles from a position about 2 miles westward of Jabal Sur, the land between Jabal Sur and Jabal Mehdi being low. The outline of the ridge is very remarkable ; the highest peak, 1,375 feet ($419^{\text{m}}1$) high, is in the form of a sugar-loaf at its eastern end ; the Asses' ears, 2 miles westward, is a curious double peak, a few feet lower than the summit. From eastward, this ridge, as also Jabal Sur and Gwādar head, appears detached. See view on chart 38.

Gwādar head.—Gwādar head is a rocky peninsula connected to the mainland by a low, narrow, sandy isthmus, on which stands the town of Gwādar, and on the eastern and western sides of which are Gwādar East bay and Gwādar West bay, also known as Demi zar and Padi zar, respectively, both sandy bays.

The headland is faced on all sides with cliffs and its summit slopes down from the highest bluff, which is about 480 feet ($146^{\text{m}}3$) high and is situated at the southern end of the western side of the isthmus. See view on plan on chart 38.

Ras Nūh, the eastern extremity of the headland, is a bluff about 280 feet ($85^{\text{m}}3$) high, about $8\frac{1}{2}$ miles south-westward of Jabal Sur. A temple stands close to the edge of the cliff, at Ras Nūh. With its high white bluffs, the headland is conspicuous from eastward and then appears as a wedge-shaped island ; from southward and south-westward it is not so remarkable, but appears darker in colour than the land behind it. See view on chart 38.

Bandar Hairān, about three quarters of a mile south-westward of Ras Nūh, is a small bay frequented by fishing boats ; the cliffs in the vicinity of the bay are low and the beach is of sand.

Ras Kamaiti (Kamiti), the western extremity of the headland, is a cliff about 70 feet ($21^{\text{m}}3$) high. A small white tomb on the southern edge of the cliff, about half a mile eastward of Ras Kamaiti, is conspicuous from southward when the sun is shining on it.

A rocky spit, with a depth of 4 fathoms ($7^{\text{m}}3$), extends about 9 cables southward from a low rocky point about a quarter of a mile southward of Ras Nūh (*Lat. 26° 06' N., Long. 62° 23' E.*).

Directions.—Tidal streams.—A vessel approaching from eastward should keep in depths of from 10 to 15 fathoms ($18^{\text{m}}3$ to $27^{\text{m}}4$) ; even if the weather is hazy, it would scarcely be possible to pass Gwādar head in these depths without seeing it.

A vessel approaching from westward should not get into depths of less than 12 fathoms ($21^{\text{m}}9$) until Ras Nūh bears less than 350° , particularly in hazy weather.

There is usually a ripple over the rocky spit and, during the Southwest monsoon, it is marked by breakers. There is a depth of 5 fathoms ($9^{\text{m}}1$) about 3 cables eastward of Ras Nūh.

In hazy weather vessels not bound to Gwādar should keep in depths greater than 20 fathoms ($36^{\text{m}}6$).

At night a good look-out should be kept for fishing boats and canoes with their nets out.

The tidal streams off Gwādar head set eastward and westward, and, though their rate is reported to be hardly perceptible, H.M.S.

Chart 38, plan of Gwādar bay.

Crocus, in June, 1927, experienced an east-going current of about 4 knots off Ras Nūh (*Lat. 25° 06' N., Long. 62° 23' E.*), at about one hour before high-water by the shore.

Gwādar East bay.—**Dangers.**—Gwādar East bay is entered between Jabal Sur and Ras Nūh. Except on the northern side of the headland its shores are low and sandy. A flat, over which there are depths of about 2 fathoms (3^m7), extends from one to 2½ miles from the eastern side of the isthmus. It was reported, in 1934, that erosion of the isthmus is continual and that shoaling was taking place in the bay. Shoals, with depths of 3, 3½ and 5½ fathoms (5^m5, 5^m9 and 9^m6) over them, lie about 1½ miles northward, 1½ miles north-north-eastward and 1½ miles north-eastward, respectively, of the temple on Ras Nūh.

The bay is well sheltered from south-westerly winds, but during the South-west monsoon, the long swell rounding Ras Nūh causes vessels at anchor to roll heavily. During easterly winds, communication with the shore is sometimes difficult, but these winds are seldom strong enough to endanger a vessel; during the continuance of such winds a steam vessel might obtain shelter in Gwādar West bay. See page 78.

20

A boat harbour is formed by a projecting cliffy point, at the southern end of the bay, on the northern side of Gwādar head about 1½ miles westward of Ras Nūh.

There is no proper landing place either in Gwādar East bay or Gwādar West bay, the boats being hauled up on the shelving beach.

25

Anchorage.—Directions.—Anchorage may be obtained in Gwādar East bay with the telegraph office at Gwādar bearing between 262° and 250° as close in as the draught of the vessel will permit; the closer the better, both to facilitate communication with the town and to obtain smoother water.

30

Approaching from southward or westward, from a position about 4 miles southward of Ras Nūh, with the western end of Jabal Mehdi ridge bearing less than 348° and open eastward of Ras Nūh, a vessel should steer for the eastern peak of the ridge, bearing less than 005°, until Ras Nūh is abeam, whence she should steer for the anchorage as convenient, taking care to avoid the shoals northward and north-eastward of Ras Nūh, previously mentioned.

35

Gwādar.—This town is situated near the southern end of the sandy isthmus connecting Gwādar head to the mainland. Most of the dwellings are mat huts, but a number of mud and stone buildings, amongst which is a conspicuous mosque, are grouped round a square fort with a high tower. Northward of the town is the telegraph office, a large block of buildings, and about half a mile farther northward is the Wali's fort with its flagstaff, which must not be mistaken for the telegraph office. This fort is a large white square building, conspicuous either from eastward or westward. The flagstaff stands on the south-eastern corner of the roof and its truck is about 100 feet (30^m5) in height. About midway between the Wali's fort and the telegraph office are two wireless masts, each 70 feet (21^m3) in height, but they are not conspicuous from eastward or westward as they are partially obscured by trees. In the vicinity of the town, there are a few date palms and banyan trees.

45

The town and district, the coast of which latter extends from the mouth of Karawat river to the neighbourhood of Ras Pishukān (see

Chart 38, plan of Gwādar bay.

below), is administered by an Arab Wali representing the Sultan of Muscat.

A British Political Agent resides at Gwādar.

5 Chart 38, with plan of Gwādar bay.

Gwādar West bay.—Anchorage.—This bay is entered between Ras Kamaiti and Ras Pishūkān (Pishkān), about 10 miles westward. A spit extends about half a mile southward from Ras Kamaiti, but the north-western side of the point is fairly steep-to; a bank, with 10 depths of less than 3 fathoms (5^m5), extends nearly $2\frac{1}{2}$ miles offshore on the western side of Gwādar isthmus, which latter forms the eastern shore of the bay.

Ras Pishūkān (*Lat. 25° 06' N., Long. 62° 05' E.*) consists of narrow rocky cliffs about 20 feet (6^m1) high, and a rocky spit, on which the sea 15 breaks, extends about $3\frac{1}{2}$ cables south-eastward from it. The headland is reported to be the western limit of Gwādar territory, but the frontier has not been permanently defined.

With the exception of Toshdān kūh, near which there is a fort, a small range of low hills on the coast about 7 miles northward of Ras 20 Pishūkān, the shores of the bay are low.

Khōr Akāra (Ankara) is a small stream at the head of the bay eastward of Toshdān kūh, and in its vicinity the land is marshy.

The small village of Pishūkān is situated on the western side of the bay about 4 miles north-north-westward of Ras Pishūkān.

25 Anchorage may be obtained in Gwādar West bay, at about $2\frac{1}{2}$ miles offshore, in a depth of 4 fathoms (7^m3), sand, with Ras Kamaiti bearing 198° , and the telegraph office at Gwādar, 090° ; or, on the western side of the bay, in a depth of 4 fathoms (7^m3), with Ras Pishūkān bearing 182° , distant about 3 miles.

30 Chart 38.

Coast.—The coast for 12 miles westward of Ras Pishūkān is low, and thence for about 4 miles southward, to Ras Ganz (Gunz), it consists of a succession of rocky, cliffy points separated by sandy beaches.

Bandar Ganz entered between Ras Pishūkān and Ras Ganz, affords 35 shelter, during westerly winds, to small vessels, in depths of from 3 to 4 fathoms (5^m5 to 7^m3), about one mile offshore.

Ras Ganz is of light colour and about 200 feet (61^m0) high; it is the bluff eastern point of Katāgar promontory, and is conspicuous from westward but not so from eastward.

40 Ganz is a small village of mat huts on the coast about 4 miles northward of Ras Ganz; a small whitewashed mosque is the only permanent building.

Katāgar promontory, 454 feet (138^m4) high, separates Bandar Ganz from Gwātar bay; its southern side, of which Ras Jiwani (Jiyúni), 45 about 100 feet (30^m5) high, is its western extremity, is an almost unbroken line of cliff, interspersed at its foot with sandy beaches. Ras Garnān (*Lat. 25° 01' N., Long. 61° 45' E.*), about 2 miles eastward of Ras Jiwani, is about 20 feet (6^m1) high, and projects about half a mile southward beyond the line of the higher cliffs.

50 Remarkable hills with rugged peaks, and amongst which are pillars of clay, rise a short distance inland and extend nearly to the Dasht river (page 80); northward of these hills is the great plain or valley of the Dasht.

The bottom off Katāgar promontory is very uneven in depths of less 55 than 10 fathoms (18^m3).

Chart 748b.

Chart 38, with plan of Gwātar bay.

Gwātar bay and approaches.—Dangers.—Gwātar bay is entered between Ras Jiwani and Ras Fastā, about 15 miles west-north-westward. A spit, which appears to dry, extends about one cable westward from the western side of Ras Jiwani. 5

The gradual decrease of soundings towards the coast southward of Gwātar bay is a useful guide to a vessel approaching at night or in thick weather. The bottom consists of white clay, very tenacious and gritty. After heavy rain, the water in the bay and its approaches becomes discoloured, and much drift wood is seen. 10

A shoal patch, over which there is a depth of 6 fathoms (11^m0), was reported by H.M.S. *Sphinx*, in 1891, to lie about 3½ miles south-eastward of Ras Jiwani.

A shoal, over which there is a depth of 2½ fathoms (4^m6), rock and sand, lies about 1½ miles south-eastward of Ras Jiwani, and there are 15 depths of 7 fathoms (12^m8) between it and the coast.

A shoal, over which there is a depth of 2 fathoms (3^m7), lies about one mile westward of the western extremity of Ras Jiwani, and a shoal, with depths of from 4 to 5 fathoms (7^m3 to 9^m1), lies about 2 miles westward of the same point; for about 2½ miles northward of the point, a reef extends about half a mile offshore. There are several shoal patches northward of the 2-fathom (3^m7) shoal, and depths of less than 3 fathoms (5^m5) were reported, in 1921, within about 1½ miles of the coast northward of Ras Jiwani. 20

The eastern shore of the bay is cliffy for about 3½ miles northward of Ras Jiwani, beyond which it is sandy with rocky hills rising at a short distance inland. At the head of the bay, which is low, are several creeks and mangrove swamps extending some miles inland. The western shore is a succession of bluff points, separated by sandy beaches, behind which the land rises to table-topped hills. 25

The hills near the eastern shore of the bay are of even outline; but behind them are others of fantastic shape, the highest, in the form of a remarkable pillar, being very conspicuous. 30

Jiwani village, consists of two groups of mat huts, situated on low rocky cliffs on the eastern shore of Gwātar bay, about 2½ miles northward of Ras Jiwani and a third group on that point. Partridge, hare, and gazelle shooting can be had. 35

There is good landing, even during the South-west monsoon, in a bay about 1½ miles northward of the western extremity of Ras Jiwani. At the head of this bay, and half a mile inland, is a white 40 rectangular stone fort. The coastline of this part, as charted, was reported, in 1921, to be only approximately correct.

Khōr Jiwani is the easternmost creek at the head of the bay.

Ras Fastā (*Lat. 25° 04' N., Long. 61° 25' E.*), the eastern extremity of a detached ridge extending about 6 miles westward along the coast, 45 is a cliff about 45 feet (13^m7) high.

South islet and North islet, lying about one mile eastward of Ras Fastā, are two small rocks situated close together on a reef, off which foul ground extends for about 4 cables; South islet, the higher, has an elevation of 108 feet (32^m9). 50

Two shoals, with depths of 4½ and 4¾ fathoms (7^m8 and 8^m2), lie about 1½ and 2½ miles, respectively, south-westward of Ras Fastā.

On the northern side of Ras Fastā is a small bay affording shelter to small craft, in depths of from 1½ to 3 fathoms (2^m7 to 5^m5), mud.

Chart 748b.

Chart 38, with plan of Gwātar bay.

Castle hill, about $3\frac{1}{4}$ miles north-westward of Ras Fastā, is square, rocky, and 430 feet ($131^{\text{m}1}$) high ; its summit, seen over the lower hills in front of it, resembles a fort. (See view on chart 38.) It does not, however, show until bearing less than about 340° .

Bahu or Dashtiārī Chil river, which flows into the bay, about $7\frac{1}{2}$ miles north-eastward of Ras Fastā, is the mouth of two combined streams ; it has a shallow bar, but is deep inside, and is tidal for some distance. The position of the entrance can be identified from a distance by the 10 masts of the dhows anchored within. The only landing for boats is within the entrance.

Gwātar village stands near the mouth of Bahū river.

There is a conspicuous white fort with two towers on the western side of the village. Between it and the river is a small round tower 15 with a tall and conspicuous flagstaff.

After rain, the water is fresh some miles up the river. There are several creeks between the mouth of Bahū river and Khōr Dasht, about 7 miles eastward.

Drabhol kūh (Darabūl), northward of the middle of the bay and 20 about 9 miles inland, is a detached table-topped hill, about 500 feet ($152^{\text{m}4}$) high, with sloping sides.

The depths in the bay, over a mud bottom, decrease regularly from about 6 fathoms ($11^{\text{m}0}$) at the entrance, but, in 1915, they were reported to be less than charted.

25 Khōr Dasht is the mouth of the Dasht river, the largest on this coast ; the river flows south-westward and finally, passes eastward of Drabhol kūh into the head of the khōr. The following is from a report in 1916. "The mouth of the khōr is about 2 cables wide, between flat sandy banks almost awash, on which the latter breaks during the

30 South-west monsoon. The bar and breakers extend about one mile southward from the coast. The passage over the bar is on the eastern side of the breakers. A depth of 4 feet ($1^{\text{m}2}$) can be obtained by keeping a grass-covered sand hill, situated near the shore on the western side of the entrance, in line with the third distant peak westward of

35 Drabhol kūh range, bearing 338° . Course should not be altered up the river until the sandy spit on the eastern bank is well clear of the eastern extremity of Drabhol kūh. For the first two miles the eastern bank should be followed. Above this the greater depths are on the concave sides of the bends in the river. About 10 or 11 miles from

40 the entrance, the depth is only 2 feet ($0^{\text{m}6}$), the tidal rise being from 2 to 3 feet ($0^{\text{m}6}$ to $0^{\text{m}9}$). The river is tidal for about 12 miles from its mouth ; in places it decreases in width to about half a cable and there, when the river is in flood, the depths are from 2 to $3\frac{1}{4}$ fathoms ($3^{\text{m}7}$ to $6^{\text{m}4}$)."

45 Chart 38.

PERSIAN MAKRĀN.—General remarks.—The coast of Persian Makrān extends from the Perso-Kalāt frontier in Gwātar bay (*Lat.* $25^{\circ} 10' N.$, *Long.* $61^{\circ} 33' E.$), westward for about 210 miles to Jāsk. In places it is low, with ranges of mountains some distance inland, but 50 there are many high rocky points and hills near the coast. The country, though barren, is not absolutely desert. There are a number of villages or settlements, but no town of importance, and the population is scanty.

Chart 748b.

Chart 38.

Navigation along this coast is impeded by the land being frequently obscured by dust haze, soundings being then the only guide ; this is especially the case from April to July. Due to this haze, when only about 5 miles offshore and in depths of less than 10 fathoms (18^m3), it is often necessary to obtain the position of the vessel by astronomical observations. 5

Coast.—For about 6 miles west-north-westward of Ras Fastā, the coast is cliffy, thence for 2 miles there is a low gap, where the coast recedes for a short distance, and for the next 7 miles to Ras Brīs, 10 there are vertical white cliffs with a level summit about 200 feet (61^m0) high. From about 3 miles westward of Ras Fastā, the coast is fringed with a shoal gradually increasing in width until at Ras Brīs its outer edge lies about one mile offshore.

Ras Brīs is at the western end of the white cliffs ; north-eastward of, 15 and detached from, the latter is a range of white clay hills with very remarkable peaks ; both Ras Brīs and the range within it are conspicuous (*see* view on chart 38). Brīs, about 1½ miles north-eastward of Ras Brīs, is a small fishing village on the shore of a bay on the northern side of the cape. 20

Anchorage may be obtained, in a depth of about 5 fathoms (9^m1), sand, in the middle of this bay ; the depths shoal gradually towards the shore.

Between Brīs and Siāh (Siyā) kūh, about 18 miles west-north-westward, the coast is low and sandy. Siāh kūh, about 1,000 feet (304^m8) 25 high, is a dark round hill, situated close to the coast, with cliffs on its seaward side.

From Ras Brīs to about 3 miles eastward of Siāh kūh there are depths of 5 fathoms (9^m1) about 1½ miles offshore, but depths of 6 fathoms (11^m0) were obtained in 1911, about half a mile westward 30 of Ras Brīs.

Kochu is a small settlement about 12 miles westward of Brīs and there is a large village on the coast, about 1½ miles east-south-eastward of Siāh kūh.

Kinj Dap is a gap in the coastal hills on the western side of Siāh kūh, 35 through which flows a small stream of the same name, the mouth of which is probably usually barred by sand, but after heavy rains in the interior it becomes open ; at its mouth is a grove of acacia trees and on its eastern bank, about 2½ miles from the sea, is the village of Kinj. 40

Between Kinj Dap and Chāhbār point (*Lat.* 25° 17' *N.*, *Long.* 60° 36' *E.*), about 13 miles west-north-westward, the coast consists of rocky hills and cliffs, gradually decreasing in elevation towards the point. Inland of these coastal hills, a vast plain extends westward for many miles. 45

Khāki kūh, north-eastward of Siāh kūh and about 9 miles inland, rises to an elevation of about 2,000 feet (609^m6) (*see* view on chart 38). The range extends for some miles eastward and westward, and its southern face is vertical ; its crest is deeply indented, and when seen from westward presents a double peak with a bluff south-eastward of it ; being composed of white clay it is conspicuous when the sun shines on it. 50

Between Ras Brīs and Chāhbār point, the bottom, in depths of less than 10 fathoms (18^m3), is mud.

Chart 748b.

Chart 38, with plan of Chāhbār bay.

Chāhbār bay.—Light.—Dangers.—This bay is entered between Chāhbār point and Ras Kūhlab, situated about $7\frac{1}{2}$ miles westward.

Chāhbār point is low and rocky and on it are some small sand hills ; near its extremity is a small square tomb with a white dome, about one mile east-north-eastward of which are two dark coloured flat-topped buildings, one of which is the telegraph office, which assist in identifying the point ; this building is visible from south-eastward. A reef extends about 3 cables westward from the point, and for a distance of about one cable farther the bottom is foul.

The north-western side of the point is bordered by a reef, and foul ground extends about $2\frac{1}{2}$ cables offshore, as far north-eastward as a small clump of date trees near the ruins of a fort ; northward of these trees the beach is sandy.

16 An obstruction was reported, in 1937, to lie three-quarters of a mile west-north-westward of Chāhbār point. A shoal, with a depth of $2\frac{1}{2}$ fathoms ($5^{\text{m}}0$), lies about 9 cables northward of the point and the same distance offshore.

Tiz point lies about $3\frac{1}{2}$ miles northward of Chāhbār point and the intervening coast forms a small bay, at the head of which is Chāhbār town.

A rocky bank, over which the depths are from $1\frac{1}{2}$ to 2 fathoms ($2^{\text{m}}7$ to $3^{\text{m}}7$), extends 3 miles north-westward from Tiz point.

A light is exhibited, at an elevation of 36 feet ($11^{\text{m}}0$), from the roof 28 of the telegraph office.

Ras Kūhlab is the extremity of a promontory, the sides of which consist of low cliffs. Within Chāhbār bay, and on the northern side of this promontory, is a cliffy point, 270 feet ($82^{\text{m}}3$) high, situated about $2\frac{1}{2}$ miles north-westward of Ras Kūhlab.

30 For the first 4 miles within the entrance points, the shores of the bay, on either side, are rocky ; at the head of the bay is a large plain, the shores of which are low and swampy.

For a distance of about $2\frac{1}{2}$ miles south-eastward of Tiz point, the shore of Chāhbār bay consists of cliffs about 150 feet ($45^{\text{m}}7$) high, rising steeply to a tableland about 400 feet ($121^{\text{m}}9$) high, the southern side of which is composed of cliffy terraces, and the south-eastern side, at about 4 miles eastward of Tiz point, is in places almost precipitous (see view facing page 93). North-eastward of Tiz point, the cliffs turn inland forming the southern side of the large plain inland of 40 Chāhbār bay. Immediately northward of Tiz point is the mouth of a valley, in which, about one mile inland, is the village of Tiz. At the entrance of this valley is a small hill on which is a fort, and, fronting it, a shallow lagoon which fishing craft can enter at high water.

Namak rūd flows out about 6 miles northward of Tiz point. 45 Kunārak village (*Lat. $25^{\circ} 21' N.$, Long. $60^{\circ} 24' E.$*) is situated on the western shore of Chāhbār bay about $5\frac{1}{2}$ miles north-westward of Ras Kūhlab ; there was a conspicuous tree, in 1911, close southward of the village.

A range of mountains, on the northern side of the plain at the head 50 of Chāhbār bay, runs parallel with the coast about 8 miles inland ; one of its summits, Kūh-i-Guransan (Quoin), is conspicuous and about 2,400 feet ($731^{\text{m}}5$) high ; about 10 miles westward of it, is a sharp peak which may be identified from south-westward.

Anchorage.—Directions.—Anchorage may be obtained by small

Chart 748b.

Chart 38, with plan of Chahbār bay.

vessels in Chāhbār bay, in a depth of about 4 fathoms ($7^{\text{m}}3$), sand, with the tomb on Chāhbār point bearing 170° , and the mosque (see below) in Chāhbār bearing 110° ; native craft anchor, in depths of about 2 fathoms ($3^{\text{m}}7$), about half a mile off the town.

5

During the South-west monsoon, when a heavy south-south-easterly swell is rolling into the bay, sheltered anchorage with no swell may be obtained about $3\frac{1}{4}$ miles eastward of Kunārak village; this anchorage also affords shelter during a shamāl.

Anchorage in Chāhbār bay is prohibited southward of a line drawn 10
 270° from the mosque in the town.

The best landing place is directly under the barracks in Chāhbār, where a good lee is given by a flat rock. During the South-west monsoon, landing is difficult owing to the heavy swell.

The two entrance points of the bay, being light in colour, are not 15 easily distinguished at night, and should be approached with caution, vessels being guided by the light on the telegraph office.

The tidal streams in the bay are scarcely perceptible.

Chāhbār town.—This town is situated on the eastern side of Chāhbār bay about $1\frac{1}{4}$ miles north-eastward of Chāhbār point. A large 20 white mosque, with a white dome, stands about half a mile northward of the light structure and is conspicuous from seaward.

Barracks, consisting of three large one-storied buildings, are situated near the telegraph station.

Sheep and bullocks may be procured from the neighbouring country. 25
Ibex may be shot on Ras Kūhlab.

A Persian doctor is Quarantine officer at Chāhbār.

Chāhbār is connected to the general telegraph system.

For communication by air, see page 17.

Climate.—Health.—During the South-west monsoon in the Indian 30 ocean, south-south-easterly winds of some strength are common by day, but fall light at night. These winds cause a heavy sea to break all round the shores of the bay, except at the town, which is sheltered. The shamāl is fairly frequent in winter. The prevalence of south-south-easterly winds renders Chāhbār much more suitable to Europeans than 35 almost any other place in, or near, the entrance of the Persian gulf.
Chart 38.

Coast.—Anchorages.—Dangers.—A short distance westward of Ras Kūhlab the coast becomes higher and may be safely approached to a distance of about one mile. Ras Puzim (Pazim), about 11 miles 40 west-north-westward of Ras Kūhlab, is faced with cliffs, about 300 feet ($91^{\text{m}}4$) high; there are depths of 3 fathoms ($5^{\text{m}}5$) within about one mile of the point, outside which the depths increase to 6 and 8 fathoms ($11^{\text{m}}0$ and $14^{\text{m}}6$). Puzim bay is entered between Ras Puzim and Ras Rashidi, about 5 miles westward.

45

Ras Rashidi (*Lat. $25^{\circ} 19' N.$, Long. $60^{\circ} 11' E.$*) is the eastern extremity of a table-topped promontory, about 150 feet ($45^{\text{m}}7$) high, the southern side of which trends westward for about $5\frac{1}{4}$ miles, and ends in a somewhat higher vertical cliff; this promontory is almost inaccessible on all sides, and the land on its northern side is low and sandy; 50 there are depths of 4 fathoms ($7^{\text{m}}3$) about half a mile off its southern side.

Puzim bay was reported in 1910 to extend farther northward than charted; the shore within its entrance points is low and sandy;

Chart 38, plan of Gwādar bay.

below), is administered by an Arab Wali representing the Sultan of Muscat.

A British Political Agent resides at Gwādar.

5 Chart 38, with plan of Gwādar bay.

Gwādar West bay.—**Anchorage.**—This bay is entered between Ras Kamaiti and Ras Pishukān (Pishkān), about 10 miles westward. A spit extends about half a mile southward from Ras Kamaiti, but the north-western side of the point is fairly steep-to; a bank, with 10 depths of less than 3 fathoms (5^m5); extends nearly $2\frac{1}{2}$ miles offshore on the western side of Gwādar isthmus, which latter forms the eastern shore of the bay.

Ras Pishukān (*Lat. 25° 06' N., Long. 62° 05' E.*) consists of narrow rocky cliffs about 20 feet (6^m1) high, and a rocky spit, on which the sea 15 breaks, extends about $3\frac{1}{2}$ cables south-eastward from it. The headland is reported to be the western limit of Gwādar territory, but the frontier has not been permanently defined.

With the exception of Toshdān kūh, near which there is a fort, a small range of low hills on the coast about 7 miles northward of Ras 20 Pishukān, the shores of the bay are low.

Khōr Akāra (Ankara) is a small stream at the head of the bay eastward of Toshdān kūh, and in its vicinity the land is marshy.

The small village of Pishukān is situated on the western side of the bay about 4 miles north-north-westward of Ras Pishukān.

25 Anchorage may be obtained in Gwādar West bay, at about $2\frac{1}{4}$ miles offshore, in a depth of 4 fathoms (7^m3), sand, with Ras Kamaiti bearing 198° , and the telegraph office at Gwādar, 090° ; or, on the western side of the bay, in a depth of 4 fathoms (7^m3), with Ras Pishukān bearing 182° , distant about 3 miles.

30 Chart 38.

Coast.—The coast for 12 miles westward of Ras Pishukān is low, and thence for about 4 miles southward, to Ras Ganz (Gunz), it consists of a succession of rocky, cliffy points separated by sandy beaches.

Bandar Ganz entered between Ras Pishukān and Ras Ganz, affords 35 shelter, during westerly winds, to small vessels, in depths of from 3 to 4 fathoms (5^m5 to 7^m3), about one mile offshore.

Ras Ganz is of light colour and about 200 feet (61^m0) high; it is the bluff eastern point of Katāgar promontory, and is conspicuous from westward but not so from eastward.

40 Ganz is a small village of mat huts on the coast about 4 miles northward of Ras Ganz; a small whitewashed mosque is the only permanent building.

Katāgar promontory, 454 feet (138^m4) high, separates Bandar Ganz from Gwātar bay; its southern side, of which Ras Jiwani (Jiyúni), 45 about 100 feet (30^m5) high, is its western extremity, is an almost unbroken line of cliff, interspersed at its foot with sandy beaches. Ras Garnān (*Lat. 25° 01' N., Long. 61° 45' E.*), about 2 miles eastward of Ras Jiwani, is about 20 feet (6^m1) high, and projects about half a mile southward beyond the line of the higher cliffs.

50 Remarkable hills with rugged peaks, and amongst which are pillars of clay, rise a short distance inland and extend nearly to the Dasht river (page 80); northward of these hills is the great plain or valley of the Dasht.

The bottom off Katāgar promontory is very uneven in depths of less 55 than 10 fathoms (18^m3).

Chart 748b.

Chart 38, with plan of Gwātar bay.

Gwātar bay and approaches.—Dangers.—Gwātar bay is entered between Ras Jiwani and Ras Fastā, about 15 miles west-north-westward. A spit, which appears to dry, extends about one cable westward from the western side of Ras Jiwani.

The gradual decrease of soundings towards the coast southward of Gwātar bay is a useful guide to a vessel approaching at night or in thick weather. The bottom consists of white clay, very tenacious and gritty. After heavy rain, the water in the bay and its approaches becomes discoloured, and much drift wood is seen.

A shoal patch, over which there is a depth of 6 fathoms ($11^{\text{m}0}$), was reported by H.M.S. *Sphinx*, in 1891, to lie about $3\frac{1}{2}$ miles south-eastward of Ras Jiwani.

A shoal, over which there is a depth of $2\frac{1}{2}$ fathoms ($4^{\text{m}6}$), rock and sand, lies about $1\frac{1}{2}$ miles south-eastward of Ras Jiwani, and there are depths of 7 fathoms ($12^{\text{m}8}$) between it and the coast.

A shoal, over which there is a depth of 2 fathoms ($3^{\text{m}7}$), lies about one mile westward of the western extremity of Ras Jiwani, and a shoal, with depths of from 4 to 5 fathoms ($7^{\text{m}3}$ to $9^{\text{m}1}$), lies about 2 miles westward of the same point; for about $2\frac{1}{2}$ miles northward of the point, a reef extends about half a mile offshore. There are several shoal patches northward of the 2-fathom ($3^{\text{m}7}$) shoal, and depths of less than 3 fathoms ($5^{\text{m}5}$) were reported, in 1921, within about $1\frac{1}{2}$ miles of the coast northward of Ras Jiwani.

The eastern shore of the bay is cliffy for about $3\frac{1}{2}$ miles northward of Ras Jiwani, beyond which it is sandy with rocky hills rising at a short distance inland. At the head of the bay, which is low, are several creeks and mangrove swamps extending some miles inland. The western shore is a succession of bluff points, separated by sandy beaches, behind which the land rises to table-topped hills.

The hills near the eastern shore of the bay are of even outline; but behind them are others of fantastic shape, the highest, in the form of a remarkable pillar, being very conspicuous.

Jiwani village, consists of two groups of mat huts, situated on low rocky cliffs on the eastern shore of Gwātar bay, about $2\frac{1}{2}$ miles northward of Ras Jiwani and a third group on that point. Partridge, hare, and gazelle shooting can be had.

There is good landing, even during the South-west monsoon, in a bay about $1\frac{1}{2}$ miles northward of the western extremity of Ras Jiwani. At the head of this bay, and half a mile inland, is a white rectangular stone fort. The coastline of this part, as charted, was reported, in 1921, to be only approximately correct.

Khōr Jiwani is the easternmost creek at the head of the bay.

Ras Fastā (*Lat. $25^{\circ} 04' N.$, Long. $61^{\circ} 25' E.$*), the eastern extremity of a detached ridge extending about 6 miles westward along the coast, is a cliff about 45 feet ($13^{\text{m}7}$) high.

South islet and North islet, lying about one mile eastward of Ras Fastā, are two small rocks situated close together on a reef, off which foul ground extends for about 4 cables; South islet, the higher, has an elevation of 108 feet ($32^{\text{m}9}$).

Two shoals, with depths of $4\frac{1}{2}$ and $4\frac{1}{2}$ fathoms ($7^{\text{m}8}$ and $8^{\text{m}2}$), lie about $1\frac{1}{2}$ and $2\frac{1}{2}$ miles, respectively, south-westward of Ras Fastā.

On the northern side of Ras Fastā is a small bay affording shelter to small craft, in depths of from $1\frac{1}{2}$ to 3 fathoms ($2^{\text{m}7}$ to $5^{\text{m}5}$), mud.

Chart 748b.

Chart 38, with plan of Gwātar bay.

Castle hill, about $3\frac{1}{2}$ miles north-westward of Ras Fastā, is square, rocky, and 430 feet ($131^{\text{m}1}$) high ; its summit, seen over the lower hills in front of it, resembles a fort. (See view on chart 38.) It does not, however, show until bearing less than about 340° .

Bahu or Dashtiārī Chil river, which flows into the bay, about $7\frac{1}{2}$ miles north-eastward of Ras Fastā, is the mouth of two combined streams ; it has a shallow bar, but is deep inside, and is tidal for some distance. The position of the entrance can be identified from a distance by the 10 masts of the dhows anchored within. The only landing for boats is within the entrance.

Gwātar village stands near the mouth of Bahu river.

There is a conspicuous white fort with two towers on the western side of the village. Between it and the river is a small round tower 15 with a tall and conspicuous flagstaff.

After rain, the water is fresh some miles up the river. There are several creeks between the mouth of Bahu river and Khōr Dasht, about 7 miles eastward.

Drabhol kūh (Darabūl), northward of the middle of the bay and 20 about 9 miles inland, is a detached table-topped hill, about 500 feet ($152^{\text{m}4}$) high, with sloping sides.

The depths in the bay, over a mud bottom, decrease regularly from about 6 fathoms ($11^{\text{m}0}$) at the entrance, but, in 1915, they were reported to be less than charted.

25 Khōr Dasht is the mouth of the Dasht river, the largest on this coast ; the river flows south-westward and finally, passes eastward of Drabhol kūh into the head of the khōr. The following is from a report in 1916. "The mouth of the khōr is about 2 cables wide, between flat sandy banks almost awash, on which the latter breaks during the

30 South-west monsoon. The bar and breakers extend about one mile southward from the coast. The passage over the bar is on the eastern side of the breakers. A depth of 4 feet ($1^{\text{m}2}$) can be obtained by keeping a grass-covered sand hill, situated near the shore on the western side of the entrance, in line with the third distant peak westward of

35 Drabhol kūh range, bearing 338° . Course should not be altered up the river until the sandy spit on the eastern bank is well clear of the eastern extremity of Drabhol kūh. For the first two miles the eastern bank should be followed. Above this the greater depths are on the concave sides of the bends in the river. About 10 or 11 miles from

40 the entrance, the depth is only 2 feet ($0^{\text{m}6}$), the tidal rise being from 2 to 3 feet ($0^{\text{m}6}$ to $0^{\text{m}9}$). The river is tidal for about 12 miles from its mouth ; in places it decreases in width to about half a cable and there, when the river is in flood, the depths are from 2 to $3\frac{1}{2}$ fathoms ($3^{\text{m}7}$ to $6^{\text{m}4}$)."

45 Chart 38.

PERSIAN MAKRĀN.—General remarks.—The coast of Persian Makrān extends from the Perso-Kalāt frontier in Gwātar bay (*Lat.* $25^{\circ} 10' N.$, *Long.* $61^{\circ} 33' E.$), westward for about 210 miles to Jāsk. In places it is low, with ranges of mountains some distance inland, but 50 there are many high rocky points and hills near the coast. The country, though barren, is not absolutely desert. There are a number of villages or settlements, but no town of importance, and the population is scanty.

Chart 748b.

Chart 38.

Navigation along this coast is impeded by the land being frequently obscured by dust haze, soundings being then the only guide ; this is especially the case from April to July. Due to this haze, when only about 5 miles offshore and in depths of less than 10 fathoms ($18^{\text{m}}3$), it is often necessary to obtain the position of the vessel by astronomical observations.

Coast.—For about 6 miles west-north-westward of Ras Fastā, the coast is cliffy, thence for 2 miles there is a low gap, where the coast recedes for a short distance, and for the next 7 miles to Ras Brīs, there are vertical white cliffs with a level summit about 200 feet ($61^{\text{m}}0$) high. From about 3 miles westward of Ras Fastā, the coast is fringed with a shoal gradually increasing in width until at Ras Brīs its outer edge lies about one mile offshore.

Ras Brīs is at the western end of the white cliffs ; north-eastward of, and detached from, the latter is a range of white clay hills with very remarkable peaks ; both Ras Brīs and the range within it are conspicuous (see view on chart 38). Brīs, about $1\frac{1}{2}$ miles north-eastward of Ras Brīs, is a small fishing village on the shore of a bay on the northern side of the cape.

Anchorage may be obtained, in a depth of about 5 fathoms ($9^{\text{m}}1$), sand, in the middle of this bay ; the depths shoal gradually towards the shore.

Between Brīs and Siāh (Siyā) kūh, about 18 miles west-north-westward, the coast is low and sandy. Siāh kūh, about 1,000 feet ($304^{\text{m}}8$) high, is a dark round hill, situated close to the coast, with cliffs on its seaward side.

From Ras Brīs to about 3 miles eastward of Siāh kūh there are depths of 5 fathoms ($9^{\text{m}}1$) about $1\frac{1}{2}$ miles offshore, but depths of 6 fathoms ($11^{\text{m}}0$) were obtained in 1911, about half a mile westward of Ras Brīs.

Kochu is a small settlement about 12 miles westward of Brīs and there is a large village on the coast, about $1\frac{1}{2}$ miles east-south-eastward of Siāh kūh.

Kinj Dap is a gap in the coastal hills on the western side of Siāh kūh, through which flows a small stream of the same name, the mouth of which is probably usually barred by sand, but after heavy rains in the interior it becomes open ; at its mouth is a grove of acacia trees and on its eastern bank, about $2\frac{1}{2}$ miles from the sea, is the village of Kinj.

Between Kinj Dap and Chāhbār point (*Lat. $25^{\circ} 17' N.$, Long. $60^{\circ} 36' E.$*), about 13 miles west-north-westward, the coast consists of rocky hills and cliffs, gradually decreasing in elevation towards the point. Inland of these coastal hills, a vast plain extends westward for many miles.

Khāki kūh, north-eastward of Siāh kūh and about 9 miles inland, rises to an elevation of about 2,000 feet ($609^{\text{m}}6$) (see view on chart 38). The range extends for some miles eastward and westward, and its southern face is vertical ; its crest is deeply indented, and when seen from westward presents a double peak with a bluff south-eastward of it ; being composed of white clay it is conspicuous when the sun shines on it.

Between Ras Brīs and Chāhbār point, the bottom, in depths of less than 10 fathoms ($18^{\text{m}}3$), is mud.

Chart 748b.

Chart 38, with plan of Gwātar bay.

Castle hill, about $3\frac{1}{2}$ miles north-westward of Ras Fastā, is square, rocky, and 430 feet ($131^{\text{m}1}$) high ; its summit, seen over the lower hills in front of it, resembles a fort. (See view on chart 38.) It does not, however, show until bearing less than about 340° .

Bahu or Dashtiārī Chil river, which flows into the bay, about $7\frac{1}{2}$ miles north-eastward of Ras Fastā, is the mouth of two combined streams ; it has a shallow bar, but is deep inside, and is tidal for some distance. The position of the entrance can be identified from a distance by the 10 masts of the dhows anchored within. The only landing for boats is within the entrance.

Gwātar village stands near the mouth of Bahu river.

There is a conspicuous white fort with two towers on the western side of the village. Between it and the river is a small round tower 16 with a tall and conspicuous flagstaff.

After rain, the water is fresh some miles up the river. There are several creeks between the mouth of Bahu river and Khōr Dasht, about 7 miles eastward.

Drabhol kūh (Darabúl), northward of the middle of the bay and 20 about 9 miles inland, is a detached table-topped hill, about 500 feet ($152^{\text{m}4}$) high, with sloping sides.

The depths in the bay, over a mud bottom, decrease regularly from about 6 fathoms ($11^{\text{m}0}$) at the entrance, but, in 1915, they were reported to be less than charted.

25 Khōr Dasht is the mouth of the Dasht river, the largest on this coast ; the river flows south-westward and finally, passes eastward of Drabhol kūh into the head of the khōr. The following is from a report in 1916. "The mouth of the khōr is about 2 cables wide, between flat sandy banks almost awash, on which the latter breaks during the

30 South-west monsoon. The bar and breakers extend about one mile southward from the coast. The passage over the bar is on the eastern side of the breakers. A depth of 4 feet ($1^{\text{m}2}$) can be obtained by keeping a grass-covered sand hill, situated near the shore on the western side of the entrance, in line with the third distant peak westward of

35 Drabhol kūh range, bearing 338° . Course should not be altered up the river until the sandy spit on the eastern bank is well clear of the eastern extremity of Drabhol kūh. For the first two miles the eastern bank should be followed. Above this the greater depths are on the concave sides of the bends in the river. About 10 or 11 miles from

40 the entrance, the depth is only 2 feet ($0^{\text{m}6}$), the tidal rise being from 2 to 3 feet ($0^{\text{m}6$ to $0^{\text{m}9}$). The river is tidal for about 12 miles from its mouth ; in places it decreases in width to about half a cable and there, when the river is in flood, the depths are from 2 to $3\frac{1}{2}$ fathoms ($3^{\text{m}7$ to $6^{\text{m}4}$)."'

45 Chart 38.

PERSIAN MAKRĀN.—General remarks.—The coast of Persian Makrān extends from the Perso-Kalāt frontier in Gwātar bay (*Lat.* $25^{\circ} 10' N.$, *Long.* $61^{\circ} 33' E.$), westward for about 210 miles to Jāsk. In places it is low, with ranges of mountains some distance inland, but 50 there are many high rocky points and hills near the coast. The country, though barren, is not absolutely desert. There are a number of villages or settlements, but no town of importance, and the population is scanty.

Chart 748b.

Chart 38.

Navigation along this coast is impeded by the land being frequently obscured by dust haze, soundings being then the only guide ; this is especially the case from April to July. Due to this haze, when only about 5 miles offshore and in depths of less than 10 fathoms (18^m3), it is often necessary to obtain the position of the vessel by astronomical observations. 5

Coast.—For about 6 miles west-north-westward of Ras Fastā, the coast is cliffy, thence for 2 miles there is a low gap, where the coast recedes for a short distance, and for the next 7 miles to Ras Brīs, 10 there are vertical white cliffs with a level summit about 200 feet (61^m0) high. From about 3 miles westward of Ras Fastā, the coast is fringed with a shoal gradually increasing in width until at Ras Brīs its outer edge lies about one mile offshore.

Ras Brīs is at the western end of the white cliffs ; north-eastward of, 15 and detached from, the latter is a range of white clay hills with very remarkable peaks ; both Ras Brīs and the range within it are conspicuous (*see* view on chart 38). Brīs, about 1½ miles north-eastward of Ras Brīs, is a small fishing village on the shore of a bay on the northern side of the cape. 20

Anchorage may be obtained, in a depth of about 5 fathoms (9^m1), sand, in the middle of this bay ; the depths shoal gradually towards the shore.

Between Brīs and Siāh (Siyā) kūh, about 18 miles west-north-westward, the coast is low and sandy. Siāh kūh, about 1,000 feet (304^m8) 25 high, is a dark round hill, situated close to the coast, with cliffs on its seaward side.

From Ras Brīs to about 3 miles eastward of Siāh kūh there are depths of 5 fathoms (9^m1) about 1½ miles offshore, but depths of 6 fathoms (11^m0) were obtained in 1911, about half a mile westward 30 of Ras Brīs.

Kochu is a small settlement about 12 miles westward of Brīs and there is a large village on the coast, about 1½ miles east-south-eastward of Siāh kūh.

Kinj Dap is a gap in the coastal hills on the western side of Siāh kūh, 35 through which flows a small stream of the same name, the mouth of which is probably usually barred by sand, but after heavy rains in the interior it becomes open ; at its mouth is a grove of acacia trees and on its eastern bank, about 2½ miles from the sea, is the village of Kinj. 40

Between Kinj Dap and Chāhbār point (*Lat.* 25° 17' *N.*, *Long.* 60° 36' *E.*), about 13 miles west-north-westward, the coast consists of rocky hills and cliffs, gradually decreasing in elevation towards the point. Inland of these coastal hills, a vast plain extends westward for many miles. 45

Khāki kūh, north-eastward of Siāh kūh and about 9 miles inland, rises to an elevation of about 2,000 feet (609^m6) (*see* view on chart 38). The range extends for some miles eastward and westward, and its southern face is vertical ; its crest is deeply indented, and when seen from westward presents a double peak with a bluff south-eastward of it ; being composed of white clay it is conspicuous when the sun shines on it. 50

Between Ras Brīs and Chāhbār point, the bottom, in depths of less than 10 fathoms (18^m3), is mud.

Chart 748b.

Chart 38, with plan of Chāhbār bay.

Chāhbār bay.—**Light.**—**Dangers.**—This bay is entered between Chāhbār point and Ras Kūhlab, situated about $7\frac{1}{2}$ miles westward.

Chāhbār point is low and rocky and on it are some small sand hills ; near its extremity is a small square tomb with a white dome, about one mile east-north-eastward of which are two dark coloured flat-topped buildings, one of which is the telegraph office, which assist in identifying the point ; this building is visible from south-eastward. A reef extends about 3 cables westward from the point, and for a distance of about one cable farther the bottom is foul.

The north-western side of the point is bordered by a reef, and foul ground extends about $2\frac{1}{2}$ cables offshore, as far north-eastward as a small clump of date trees near the ruins of a fort ; northward of these trees the beach is sandy.

15 An obstruction was reported, in 1937, to lie three-quarters of a mile west-north-westward of Chāhbār point. A shoal, with a depth of $2\frac{1}{2}$ fathoms ($5^{\text{m}}0$), lies about 9 cables northward of the point and the same distance offshore.

Tiz point lies about $3\frac{1}{2}$ miles northward of Chāhbār point and the intervening coast forms a small bay, at the head of which is Chāhbār town.

A rocky bank, over which the depths are from $1\frac{1}{2}$ to 2 fathoms ($2^{\text{m}}7$ to $3^{\text{m}}7$), extends 3 miles north-westward from Tiz point.

A light is exhibited, at an elevation of 36 feet ($11^{\text{m}}0$), from the roof of the telegraph office.

Ras Kūhlab is the extremity of a promontory, the sides of which consist of low cliffs. Within Chāhbār bay, and on the northern side of this promontory, is a cliffy point, 270 feet ($82^{\text{m}}3$) high, situated about $2\frac{1}{2}$ miles north-westward of Ras Kūhlab.

30 For the first 4 miles within the entrance points, the shores of the bay, on either side, are rocky ; at the head of the bay is a large plain, the shores of which are low and swampy.

For a distance of about $2\frac{1}{2}$ miles south-eastward of Tiz point, the shore of Chāhbār bay consists of cliffs about 150 feet ($45^{\text{m}}7$) high, rising steeply to a tableland about 400 feet ($121^{\text{m}}9$) high, the southern side of which is composed of cliffy terraces, and the south-eastern side, at about 4 miles eastward of Tiz point, is in places almost precipitous (see view facing page 93). North-eastward of Tiz point, the cliffs turn inland forming the southern side of the large plain inland of Chāhbār bay. Immediately northward of Tiz point is the mouth of a valley, in which, about one mile inland, is the village of Tiz. At the entrance of this valley is a small hill on which is a fort, and, fronting it, a shallow lagoon which fishing craft can enter at high water.

Namak rūd flows out about 6 miles northward of Tiz point.

45 Kunārak village (*Lat. 25° 21' N., Long. 60° 24' E.*) is situated on the western shore of Chāhbār bay about $5\frac{1}{2}$ miles north-westward of Ras Kūhlab ; there was a conspicuous tree, in 1911, close southward of the village.

A range of mountains, on the northern side of the plain at the head of Chāhbār bay, runs parallel with the coast about 8 miles inland ; one of its summits, Kūh-i-Guransan (Quoin), is conspicuous and about 2,400 feet ($731^{\text{m}}5$) high ; about 10 miles westward of it, is a sharp peak which may be identified from south-westward.

Anchorage.—Directions.—Anchorage may be obtained by small

Chart 38, with plan of Chahbār bay.

vessels in Chāhbār bay, in a depth of about 4 fathoms ($7^{\text{m}}3$), sand, with the tomb on Chāhbār point bearing 170° , and the mosque (see below) in Chāhbār bearing 110° ; native craft anchor, in depths of about 2 fathoms ($3^{\text{m}}7$), about half a mile off the town.

During the South-west monsoon, when a heavy south-south-easterly swell is rolling into the bay, sheltered anchorage with no swell may be obtained about $3\frac{1}{2}$ miles eastward of Kunārak village; this anchorage also affords shelter during a shamāl.

Anchorage in Chāhbār bay is prohibited southward of a line drawn 10° 270° from the mosque in the town.

The best landing place is directly under the barracks in Chāhbār, where a good lee is given by a flat rock. During the South-west monsoon, landing is difficult owing to the heavy swell.

The two entrance points of the bay, being light in colour, are not 15° easily distinguished at night, and should be approached with caution, vessels being guided by the light on the telegraph office.

The tidal streams in the bay are scarcely perceptible.

Chāhbār town.—This town is situated on the eastern side of Chāhbār bay about $1\frac{1}{2}$ miles north-eastward of Chāhbār point. A large 20° white mosque, with a white dome, stands about half a mile northward of the light structure and is conspicuous from seaward.

Barracks, consisting of three large one-storied buildings, are situated near the telegraph station.

Sheep and bullocks may be procured from the neighbouring country. 25° Ibex may be shot on Ras Kūhlāb.

A Persian doctor is Quarantine officer at Chāhbār.

Chāhbār is connected to the general telegraph system.

For communication by air, see page 17.

Climate.—Health.—During the South-west monsoon in the Indian 30° ocean, south-south-easterly winds of some strength are common by day, but fall light at night. These winds cause a heavy sea to break all round the shores of the bay, except at the town, which is sheltered. The shamāl is fairly frequent in winter. The prevalence of south-south-easterly winds renders Chāhbār much more suitable to Europeans than 35° almost any other place in, or near, the entrance of the Persian gulf.

Chart 38.

Coast.—Anchorages.—Dangers.—A short distance westward of Ras Kūhlāb the coast becomes higher and may be safely approached to a distance of about one mile. Ras Puzim (Pazim), about 11 miles 40° west-north-westward of Ras Kūhlāb, is faced with cliffs, about 300 feet ($91^{\text{m}}4$) high; there are depths of 3 fathoms ($5^{\text{m}}5$) within about one mile of the point, outside which the depths increase to 6 and 8 fathoms ($11^{\text{m}}0$ and $14^{\text{m}}6$). Puzim bay is entered between Ras Puzim and Ras Rashidi, about 5 miles westward.

Ras Rashidi (*Lat. $25^{\circ} 19' N.$, Long. $60^{\circ} 11' E.$*) is the eastern extremity of a table-topped promontory, about 150 feet ($45^{\text{m}}7$) high, the southern side of which trends westward for about $5\frac{1}{2}$ miles, and ends in a somewhat higher vertical cliff; this promontory is almost inaccessible on all sides, and the land on its northern side is low and sandy; there are depths of 4 fathoms ($7^{\text{m}}3$) about half a mile off its southern side.

Puzim bay was reported in 1910 to extend farther northward than charted; the shore within its entrance points is low and sandy;

Chart 38.

within it the depths were reported to be greater than charted. Puzim is a small fishing village, on the eastern side of the bay, close northward of Ras Puzim. There are a few huts, on the western side of the bay, 6 northward of Ras Rashidi.

Anchorage may be obtained off Puzim village, in a depth of about 4 fathoms ($7^{\text{m}}3$), or on the western side of the bay.

Sirgān river flows into a large creek on the north-eastern side of Puzim bay. Kair river flows into a salt-water creek about $1\frac{1}{2}$ miles 10 northward of Ras Rashidi.

The great plain inland of Chāhbār bay continues westward past Puzim bay, the mountains being about 12 miles inland; but in front of the latter are some lower hills, one of which, Milin kūh, rises about 6 miles from the head of the latter bay, and is conical.

15 Baklang rock, which dries and is steep-to, lies $2\frac{1}{4}$ miles south-eastward of Ras Rashidi; when covered there is nothing to indicate it in calm weather. At night, a vessel should not approach within depths of less than 20 fathoms ($36^{\text{m}}6$).

Ras Tānk, a rocky promontory, on which are some sand hills about 20 30 feet ($9^{\text{m}}1$) high, lies about $10\frac{1}{4}$ miles westward of the western extremity of Rashidi promontory; it extends about one mile from the coast, to which it is joined by a narrow sandy isthmus. There is a bay between these two points, the shore of which is bordered by low sand hills. A small group of brown hills, westward of which are some date palms and a few large trees, is situated about 4 miles north-eastward of Ras Tānk, and is a good mark.

There are depths of 7 fathoms ($12^{\text{m}}8$) about half a mile southward of Ras Tānk; but a shoal, over which there is a depth of 4 fathoms ($7^{\text{m}}3$), extends about one mile eastward from the promontory; the small bay 30 on the western side of the promontory is shallow, and a shoal extends about 2 miles westward from the western end of the latter.

As soundings give little warning, Ras Tānk should not be approached at night into a depth of less than 30 fathoms ($54^{\text{m}}9$).

Anchorage was obtained by H.M.S. *Bramble*, in March, 1919, in 35 a depth of 20 feet ($6^{\text{m}}1$), with the eastern end of Ras Tānk bearing 197° , distant about 5 cables, but the bottom was rocky and the holding ground bad.

Tānk village (*Lat. $25^{\circ} 22' N.$, Long. $59^{\circ} 53' E.$*) is situated about 3 miles up a large creek which forms the mouth of a branch of Kair 40 river, which latter flows from north-eastward at a short distance inland of the coastal sand hills until nearing its mouth; the creek is entered between the coast and a drying sand spit, which, when covered, is marked by breakers and lies close eastward of the root of Ras Tānk isthmus. The bār is shallow, but is sheltered by Ras Tānk; within 45 the bar the creek is deep and about $2\frac{1}{2}$ cables wide. Small dhows, with a draught of about 5 feet ($1^{\text{m}}5$), have been observed to anchor close off the entrance until high water, and then to proceed about three-quarters of a mile up the creek. In the creek, the rate of the out-going stream has been estimated to be from 2 to 3 knots.

50 For about 3 miles north-westward of Ras Tānk the coast is cliffy, thence for about 14 miles to Ras Maki it is low, but the point itself is about 100 feet ($30^{\text{m}}5$) high.

Hūmdān (Hamadan) village is situated in a grove, on the banks of a creek about $3\frac{1}{2}$ miles eastward of Ras Maki.

Chart 748b.

Chart 38.

Discoloured water was observed in 1919 off the coast between Ras Tānk and Ras Jāgīn (page 87), nearly 100 miles westward ; it is apparently caused by the water brought down by the rivers, which is carried along the coast by the tidal streams ; the edge of the discoloration is no guide to the depth, as its distance from the coast is continually varying.

Kuh Kalāt is a great range of white clay cliffs of remarkable outline ; its eastern extremity is situated about 11 miles northward of Ras Tānk, whence it extends westward for about 20 miles. A vertical cliff, about 650 feet (198^m1) high, rises about 4 miles from its eastern end and is conspicuous from south-eastward.

Biri Sai Padag, a sharp double peak, 1,680 feet (512^m1) high, is situated about 8½ miles north-north-eastward of Ras Maki. A remarkable mountain with a single peak rises about 3½ miles south-westward of Biri Sai Padag to an elevation of 1,350 feet (411^m5). From a distance of about 33 miles south-westward, these summits appear as a group of three conical peaks and form a good landmark. It was reported in 1911 that the single peak forms a part of Kūh Kalāt and that Biri Sai Padag is detached from that range.

The mountain range inland of the great plain at the head of Chāhbār bay becomes lower as it extends westward, and northward of Ras Tānk becomes less conspicuous.

Between Ras Maki and Ras Maidāni, 27 miles westward, the coast is low and sandy, and intersected by creeks ; there are depths of less than 3 fathoms (5^m5) within 1½ miles of the coast.

Khōr Darak (Doruk) is entered about 6 miles north-westward of Ras Maki ; anchorage may be obtained about half a mile off its entrance, in a depth of 2½ fathoms (4^m6). About 6 miles farther westward is the entrance to Khōr Gālag, the mouth of Khōr Rābch (page 86), which flows from the interior for a distance of about 100 miles.

The coast in the vicinity is bare and the entrance points of the creek are only about one foot (0^m3) high ; but there are some tall palms, close eastward of its mouth, which are conspicuous and are a good guide. About one mile upstream, and on the eastern side of the creek, there is a small village (*Lat.* 25° 29' *N.*, *Long.* 59° 22' *E.*), the natives of which, in 1911, were friendly ; it is situated near some palm trees, but the tops only of the latter were visible from westward, their trunks being obscured by sand hills, though from southward they were visible from seaward.

The bar, on which there is always a surf, extends about 1½ miles off the entrance of the creek, and the channel across it, in which there was, in 1913, a depth of about 1½ fathoms (2^m3), trends in a north-westerly direction. The river nearly dries, but off the western entrance point there is a depth of about 3 feet (0^m9). Dhows occasionally enter the creek at half tide.

Anchorage may be obtained, in a depth of 5 fathoms (9^m1), with the entrance of the creek bearing 170°, distant about 2½ miles, but within that distance the depths appear to shoal rapidly to 2 fathoms (3^m7).

In 1911, the best approach to the river was from eastward until its mouth was well open and then to steer directly towards the western entrance point, keeping close to the breakers on the western side ; but the condition of the entrance may be subject to change.

The best landing, with westerly winds, is on the western entrance point of the creek.

55

Chart 748b.

Chart 145, plan of Hor Rabij.

Khōr Rābch.—**Anchorage.**—**Directions.**—Khōr Rābch (Rapch), entered about 8 miles westward of Khōr Gālag, is the mouth of a large tidal backwater encumbered with flats of mud and sand. About 5 1½ miles outside the entrance, there is a bar, over which the depths in 1911, were from 1½ to 6 feet (0^m4 to 1^m8) and on which the sea breaks at low water. There are depths of from 1½ to 6½ fathoms (2^m7 to 11^m9) in the channel within the bar.

On the entrance points are some low sand hills, and the country in 10 the vicinity is desert; the inlet appears to be of no importance and is frequented only by fishing boats. Inland of Khōr Rābch there are several villages and groves of date palms.

Anchorage may be obtained, in depths of from 4½ to 4¾ fathoms (8^m2 to 8^m7), sand, about 2½ miles southward of the entrance of the 15 khōr.

The following directions were used in 1911, but may not now hold good. To enter the khōr, the bar should be approached, as close as possible, with the eastern edge of Korat el 'Usif, 80 feet (24^m4) high, seen over the eastern entrance point, bearing 349°; thence 20 course 334° will lead across the bar, a good lookout being kept for breakers on the eastern side. When inside the bar, course should be altered to pass about one cable westward of a fuzzy bush, on the eastern entrance point, after passing which the channel follows the western shore of the inlet until abreast a low sandy spit extending 25 westward from the eastern shore. Landing can be effected, near the fuzzy bush, on the low sandy spit.

Charts 38, 2837a.

Coast.—Shoal.—Ras Maidānī is faced with white cliffs, 155 feet (47^m2) high, which extend westward for about 3 miles, whence, for a 30 farther 2 miles, the coast is low and sandy and covered with small bushes. The hills, which terminate in the cliffs, are about 200 feet (61^m0) high, table-topped, and brown in colour. (See view on chart 38). Westward of the cliffs, and at a short distance inland, is a large date grove.

35 From northward of the hills near Ras Maidānī (*Lat. 25° 24' N., Long. 59° 06' E.*), the great coastal plain continues westward for about 60 miles.

The coastal bank, with depths of less than 3 fathoms, extends about 1½ miles southward from Ras Maidānī, and fringes the coast for about 40 10 miles north-westward, and attains its greatest width about 5 miles from the point where its outer edge lies about 3 miles offshore.

Caution is necessary when approaching Ras Maidānī, especially at night, for the soundings give very little warning.

A small bay, protected by a rocky point, affords a good landing 45 about 17 miles north-westward of Ras Maidānī. From a position about one mile eastward of the rocky point, to Sādaich point, about 9 miles westward, and beyond, the coastal bank extends about 2 miles offshore.

Sādaich river flows through swampy ground into a tidal creek at 50 Sādaich point, and is fronted by a shallow bar; the course of the river beyond the mountains has not been examined. Boats cannot enter the river at low water, and within it is shallow; it is probable that the entrance is subject to change. On the banks of the river, at some distance inland, are a village and some date groves. Darhaman kūh

Chart 748b.

Charts 38, 2837a.

(Quoin), on the western side of which is an extensive valley, rises to an elevation of 2,120 feet ($646^{\text{m}}2$), about 18 miles north-eastward of Sādaich point.

Aspect.—Bashāgird, an inland district of Persian Makrān, northward of Jāsk and westward of the Sādaich river, is very mountainous and very little is known of it. 5

Gukardi kūh, from 2 to 4 miles inland, about 6 miles eastward of Sādaich river, has three principal conical peaks, the northern and highest being 490 feet ($149^{\text{m}}3$) high. There is a rocky outcrop, from 10 to 20 to 50 feet ($6^{\text{m}}1$ to $15^{\text{m}}2$) high, on the plain about 5 miles eastward of Gukardi kūh. 10

Gūh kūh (Jabal Shahu), about 36 miles north-north-westward of Sādaich point, rises to an elevation of 6,220 feet ($1895^{\text{m}}9$) ; it appears to be almost detached from the neighbouring mountains in Bashāgird, 15 and from south-eastward its eastern side shows a great bluff, though from westward its summit appears rounded. *See* view on chart 38.

The coastal range extends westward from the vicinity of Darhaman kūh towards Jāsk, about 50 miles westward of Sādaich point, the elevation of its peaks varying from 1,400 to 2,540 feet ($426^{\text{m}}7$ to 20 $774^{\text{m}}2$).

A range of bare white sand hills, about 100 feet ($30^{\text{m}}5$) high, extends about 6 miles westward along the coast from Sādaich point ; there is a conspicuous tree at the western end of these sand hills.

Coast.—Anchorage.—Ras Jagin lies about 31 miles westward of Sādaich point ; the coast between the sand hills and the point is very low, and is intersected by mangrove swamps and the mouths of numerous creeks ; that immediately westward of the sand hills affords shelter to boats, having, in 1910, depths of 2 feet ($0^{\text{m}}6$) on the bar and from 6 to 8 feet ($1^{\text{m}}8$ to $2^{\text{m}}4$) a short distance within, between 30 steep-to banks about 6 feet ($1^{\text{m}}8$) high. Local craft enter other creeks, which are the mouths of streams descending, through gaps in the coastal mountains, from the Bashāgird mountains. One of the largest of these streams is Gabrig river, which flows out about 18 miles westward of Sādaich point (*Lat. 25° 33' N., Long. 58° 40' E.*). 35

The bank eastward of Sādaich point continues to fringe the coast between the mouth of that river and that of Gabrig river and extends about 2 miles offshore. An isolated sand hill, covered with scrub, rises about $1\frac{1}{2}$ miles westward of the mouth of Gabrig river. The boat channel into the Gabrig river lies at the eastern end of the bar at its 40 mouth, and has a depth in it of about one foot ($0^{\text{m}}3$).

Anchorage may be obtained off the mouth of the river, in a depth of 5 fathoms ($9^{\text{m}}1$), about 2 miles offshore, but the depths decrease rapidly to 2 fathoms ($3^{\text{m}}7$) towards the coast.

A north-easterly current was experienced in 1911, between the 45 mouth of Gabrig river and Ras Jagin.

Ras Jagin is very low and sandy, and the Jagin river flows out close eastward of it ; inland of the point is a mangrove swamp, whence a plain extends to the foot of the hills. A sandy spit, which dries, extends about half a mile south-westward from the point, there being 50 depths of 3 fathoms ($5^{\text{m}}5$) about one mile offshore ; it is probable that the configuration of this point alters after heavy rains or storms ; as there are depths of from 18 to 20 fathoms ($32^{\text{m}}9$ to $36^{\text{m}}6$) within one mile of the spit, soundings afford little guide and caution is necessary

Chart 748b.

Charts 38, 2837a.

when in its vicinity, particularly as the point itself is difficult to identify and the appearance of the hills inland cause the distance offshore to be easily over-estimated.

5 **Jāsk East bay.**—Jāsk East bay is entered between Ras Jagin and Ras Jāsk, about 20 miles west-north-westward. The north-eastern shore of the bay is low and is fringed by a sand bank, which dries out for a distance of about half a mile. There is an entrance to a stream about 8 miles north-westward of Ras Jagin. At the head
 10 of the bay, the hills approach within one mile of the shore, the coastal range ending in Kūh-i-Loh (Gazdān kūh), a ridge of white cliffs, 1,720 feet (524^m3) high, which, from westward, appears wedge-shaped. There is a village with a few date palms between Kūh-i-Loh and the shore. The north-western shore of the bay is rocky and level, about
 15 14 feet (4^m3) high, with a sandy beach and, in places, rocky ledges and low cliffs.

Anchorage.—Caution.—Anchorage, somewhat sheltered from westerly winds, may be obtained, in depths of from 6 to 8 fathoms (11^m0 to 14^m6), close off the north-western shore of the bay. The
 20 bay is open south-eastward and there is usually a light surf on the beach which becomes heavy during the South-west monsoon, although there may be only a slight ground swell in the bay. The bay is open to north-easterly and easterly winds in winter. During a shamāl, the wind is westerly and it is reported that the anchorage is then good,
 25 though a considerable swell rolls round the cape, causing a vessel at anchor to ride uneasily. For warning of a shamāl, see page 89.

Charts 145, 38, 2837a.

Vessels should not anchor with the beacon on Ras Jāsk (see below), bearing less than 046° or more than 270°, on account of the existence
 30 of telegraph cables.

The best landing place is on a sandy beach between the beacon and the cliffs north-eastward of it.

Chart 145.

JĀSK BAY.—Light.—Beacon.—This bay is entered westward
 35 of Ras Jāsk; its shore is composed of sand hills, from 10 to 20 feet (3^m0 to 6^m1) high.

Ras Jāsk is low and is the extremity of a point which extends a considerable distance from the general line of the coast. At its extremity there is a small tomb, 15 feet (4^m6) high, close to which are two dark
 40 flat-topped buildings.

A light is exhibited, at an elevation of 37 feet (11^m3), from a white round tower on the northern corner of a small square stone house, 23 feet (7^m0) in height, about 2 cables northward of Ras Jāsk (*Lat.* 25° 38' N., *Long.* 57° 45' E.).

45 A stone beacon, painted in black and white bands and 30 feet (9^m1) in height, stands on the shore of Jāsk East bay, about 4½ cables east-north-eastward of Ras Jāsk.

The telegraph buildings, about 4 cables north-eastward of the cape, consist of three flat-roofed blocks, the northern and southern blocks
 50 having conspicuous square towers; near them are some water tanks.

Jāsk village, in which there is a stone fort, extends about one mile north-eastward, along the shore of the bay, from a position about half a mile north-north-eastward of the cape.

Chart 748b.

Chart 145.

A water tank, on pillars, and roofed in, about one mile north-eastward of the telegraph buildings, is conspicuous.

Jāsk creek, about $3\frac{1}{2}$ miles north-north-eastward of Ras Jāsk, is entered by a channel through the sands, with a depth of about $1\frac{1}{2}$ feet (0^m4), with greater depths inside; the creek winds through mangrove swamps for about 4 miles and is used by native craft; the sands, which dry, extend nearly one mile off the mouth of the creek.

Jāsk fort is situated about $2\frac{1}{2}$ miles northward of the mouth of the creek and about one mile inland; it is in a ruinous condition with 10 a few houses and date trees near it, and a range of white sand hills south-eastward of it; it is not easily identified from seaward.

Dangers.—**Buey.**—Mason shoal, about 3 miles west-south-westward of Ras Jāsk, has a least depth of $2\frac{1}{2}$ fathoms (5^m0), coarse sand and shells.

A flat, over which there are depths of from $2\frac{1}{2}$ to 3 fathoms (4^m6 to 5^m5), extends about 2 miles north-westward from Ras Jāsk.

A red can buoy surmounted by a cage lies near the north-western extremity of the flat.

The western extremity of Kūh Gaigan (page 102), bearing 354°, 20 led, in 1936, between Mason shoal and the flat.

Anchorage.—**Directions.**—Convenient anchorage, partially sheltered from southerly winds by the flat extending from Ras Jāsk and by Mason shoal, but open to the shamāl, may be obtained by vessels with a draught up to 16 feet (4^m9), in a depth of $3\frac{1}{2}$ fathoms 25 (6^m4), with the lighthouse on Ras Jāsk bearing 173°, distant about 12 cables.

Larger vessels anchor farther out, in a depth of $4\frac{1}{2}$ fathoms (8^m2), with the lighthouse bearing 153°, distant about 2 miles.

Approaching from southward or eastward, a vessel may pass between 30 Mason shoal and the flat extending from Ras Jāsk (*Lat.* 25° 38' N., *Long.* 57° 45' E.); after rounding the buoy at the north-western end of the flat, course may be shaped as requisite for the anchorage; the least depth on this route is $3\frac{1}{2}$ fathoms (6^m9).

Good landing may be obtained at high water within a rocky point 35 about a quarter of a mile northward of the telegraph buildings.

Warning of the approach of a shamāl may often be obtained at the telegraph office where information is received of the commencement of one at Bushire.

Meteorological table.—See page 41.

Supplies.—**Communications.**—Fresh meat and bread can be obtained, but no vegetables; fish is plentiful.

Jāsk is connected to the general telegraph system.

For communication by air, see page 17.

W/T. station.—There is a W/T. station at Jāsk, see page 17. 45
Chart 753.

Tidal streams.—Between Ras Jāsk and Ras al Kūh, about 26 miles west-north-westward, the tidal streams off the coast set eastward and westward; near the cape, the streams are weak, but the rate increases towards Ras al Kūh. In December, 1922, H.M.S. 50 *Espiegle* experienced a strong set in the channel between Ras Jāsk and Mason shoal, though outside the channel the stream did not appear to be strong.

Charts 38, 2837a, 748b.

CHAPTER IV

**ENTRANCE TO THE PERSIAN GULF.—RUŪS AL JIBĀL, FROM DIBBA TO,
RAS ASH SHA'M, AND THE COAST OF PERSIA, FROM JĀSK' TO CHĀRAK,
INCLUDING BANDAR 'ABBĀS AND QISHM ISLAND.**

Chart 753.

RUŪS AL JIBĀL.—Aspect.—This great and mountainous promontory, the northern end of which is the Masandam (Musandam) peninsula, is situated on the western side of the entrance of the Persian gulf. Its coast is everywhere precipitous, the cliffs in most places overhanging, their bases having been eroded by the sea. There are many small sandy bays at the mouths of the valleys, and the mountains rise abruptly from the coast. The promontory is indented, on its eastern and northern sides, by numerous inlets, in which there are considerable depths. Except in a few small valleys where date groves, &c., are to be found, the land is barren, though in some of the fissures of the hills there is a scanty vegetation. The mountains, apparently consisting of bare rock, present a wild appearance, and are infested by wolves, leopards, hyænas and foxes.

15 The inhabitants of the promontory are herdsmen and fisherfolk ; they are very superstitious.

From eastward the mountain ranges of Ruūs al Jibāl appear to have two principal peaks. Jabal Qa'wa (Kawa) (*Lat.* $25^{\circ} 45'$ *N.*, *Long.* $56^{\circ} 13'$ *E.*), the southern peak, has a small notch in its summit, 20 and rises to an elevation of about 5,800 feet (1767^m8), about 6 miles north-north-westward of Al Karsha (page 66).

Jabal al Harim, the northern peak, lies about 14 miles northward of Jabal Qa'wa ; it is about 6,750 feet (2057^m4) high, and has a truncated or small table top with a small notch in its southern part. See 25 views on chart 2837a.

Weather.—For weather in the Gulf of 'Omān, see page 30.

Coast.—Ras Haffa, about $3\frac{1}{2}$ miles north-north-eastward of Ras Suwat (page 66), is the southern extremity of a narrow promontory on the eastern side of Dōha Haffa ; the promontory is of moderate 30 height and decreases in elevation towards the point.

Dōha Haffa, entered westward of Ras Haffa, is a narrow inlet with depths of from 7 to 8 fathoms (12^m8 to 14^m6), and 4 fathoms (7^m3) close inshore. The cove, which lies between high land sloping down to the water's edge, is landlocked and not noticeable from seaward. 35 A short distance within its entrance on its western side, there is a

Charts 2837a, 748b.

Chart 753.

small bay with a sandy beach at its head where there is a date garden and a few huts. At the head of the cove, there are two small villages, one on either side. H.M.S. *Triad* reported, in 1930, that the cove appeared to be shorter than charted, and that there were few places within it where landing is possible. This was confirmed by H.M.S. *Fowey*, in 1934, when she anchored near the head of the cove. 5

Khōr Mala is entered about $3\frac{1}{2}$ miles north-north-eastward of Ras Haffa, the coast between being bordered by cliffs, from 2 to 3 cables off which there are depths of 20 fathoms (36^m6). The shores of this 10 cove are indented, and the depths decrease from 8 fathoms (14^m6) in the entrance towards the head. About $3\frac{1}{2}$ miles farther northward there is another cove, in the entrance to which there is a depth of 8 fathoms (14^m6), decreasing to 3 fathoms (5^m5) in its inner part, where it is about half a mile wide ; about half-way in, the cove narrows 15 to a width of about 2 cables.

Dōhat Shārja, the southern entrance point of which is about $7\frac{1}{2}$ miles northward of Ras Haffa, is separated from the last-mentioned cove by a promontory about three-quarters of a mile wide ; it is open eastward and there are depths of 20 fathoms (36^m6) in the entrance, 20 decreasing gradually to the sandy beach at head of the cove.

Between the northern entrance point of Dōhat Shārja and Ras Hamra, about 3 miles north-north-eastward, the coast is precipitous. Lima peak, about $1\frac{1}{2}$ miles south-westward of Ras Hamra, appears as a fine cone from northward ; about 3 miles west-south-westward 25 of it is a somewhat higher saddle-shaped mountain that is also conspicuous from northward (*see* view on chart 2837a) ; from eastward these mountains do not show up against the higher land farther inland.

Ghubbat 'Aqaba is entered between Ras Hamra (*Lat.* $25^{\circ} 54' N.$, 30 *Long.* $56^{\circ} 26' E.$) and Ras Samut, about $2\frac{1}{2}$ miles north-eastward. In the north-western corner of this bay is 'Aqaba, a small village, close off which boats may obtain shelter from the nashi, the worst wind on this coast.

Ras Lima, about $1\frac{1}{2}$ miles north-eastward of Ras Samut, is the 35 termination of a narrow, precipitous promontory.

Jazirat Lima, about $3\frac{1}{2}$ cables eastward of Ras Lima, is a precipitous islet, 285 feet (86^m9) high. There is a depth of 20 fathoms (36^m6) in the channel between the islet and the point, and a small detached rock lies close to the former. The tidal streams through 40 the channel are strong. Close eastward of the islet there is a depth of 30 fathoms (54^m9).

Lima.—Anchorage.—About $1\frac{1}{2}$ miles westward of Ras Lima is a sandy bay, on the southern shore of which, at the mouth of a valley, stands the village of Lima, part of which extends up the 45 side of the hill on terraces ; in the valley there is a date grove and some cultivation. A spit extends about 2 cables offshore near the date grove north-westward of the village. The mountains in the vicinity of Lima rise abruptly to great heights. At the northern end of the sandy bay is a high precipitous hill, close off which lie 50 four rocky islets from 10 to 30 feet (3^m0 to 9^m1) high.

When visited by H.M.S. *Cyclamen*, in 1922, and by H.M.S. *Fowey*, in 1934, the inhabitants were perfectly friendly.

Anchorage may be obtained off Lima, in a depth of about 12 fathoms

Chart 753.

(21^m9), but it is open eastward and north-eastward. A small bight on the southern side of the bay, close to the cliffs, which is used by native boats, affords the best landing place in easterly winds.

6 Coast.—Ras Marovi is the northern entrance point of a bay situated 3 miles north-north-westward of Ras Lima, in which there is a patch of sandy beach. Two rocky islets, about 25 feet (7^m6) high, lie about a quarter of a mile off Ras Marovi, and a rock, of the same height, lies about one mile north-north-eastward of the same point and 10 nearly half a mile offshore, with a deep channel between the rock and the coast. About 2½ miles northward of Ras Marovi is Ras as Samid, a high cliffy point, with several small bays between them.

Döha Qabal (Duhat Kabal) is entered between Ras as Samid and a point about 1½ miles northward; the shores are indented by several 15 bays with small beaches, separated by cliffy points. At the head of the inlet is a narrow cove with a sandy beach. About a mile south-westward of the head, the mountains rise vertically, and form a tremendous bluff, over 4,000 feet (1219^m2) high. In 1902, H.M.S. *Redbreast* anchored in a depth of 7 fathoms (12^m8) about 1½ cables 20 from the head of the cove and found that within 5 fathoms (9^m1) the depths shoaled steeply to the beach.

The cove teems with fish. In the western branch of this valley or water-course are the ruins of an extensive village, and there are some huts at the head of the cove.

25 There is a small bare hill on the summit of the lofty cliffs at the northern entrance point of the inlet, and thence the deeply furrowed cliffs trend north-eastward in an unbroken line of irregular but decreasing height. Ras Sarkan (*Lat. 26° 05' N., Long. 56° 29' E.*), a vertical cliff of considerable height, is situated about 3 miles north-30 eastward of the small bare hill.

Ghubbat al Ghazira.—Anchorage.—This extensive inlet, also known as Malcolm inlet, is entered between Ras Sarkan and Ras Dilla, a vertical cliff, from 200 to 300 feet (61^m0 to 91^m4) high, with a conical summit, about 2½ miles northward; its shores are deeply 35 indented, high, and precipitous, except where valleys terminate in a few small sandy bays. (See view on chart 2837a). In the inlet on the southern side of Ghubbat al Ghazira, entered 4½ miles westward of Ras Sarkan, there is a village, and on the shore of the small bight entered about 8 miles west-north-westward of the same point, is 40 Habalain village. Fish are plentiful and can be caught in the seine. In the entrance to Ghubbat al Ghazira the bottom is rocky, but within it is mostly mud.

On the northern side of Ghubbat al Ghazira are two large inlets separated by a high, narrow, and rugged peninsula. Maqāga 45 village is situated on the shore of the western of these inlets, the northern side of which is the narrow ridge or isthmus connecting the middle of the north-eastern coast of Ruūs al Jibāl to Masandam peninsula; in places the isthmus is only about 3 cables wide and on its northern side is Khōr ash Shamm, entered from the Persian 50 gulf, see page 99.

Film is a village at the head of the outer or eastern inlet on the northern side of Ghubbat al Ghazira.

Good anchorage may be obtained over a sandy bottom in the bight of Habalain village.

Chart 748b.

Chart 38, with plan of Gwātar bay.

Castle hill, about $3\frac{1}{4}$ miles north-westward of Ras Fastā, is square, rocky, and 430 feet ($131^{\text{m}1}$) high ; its summit, seen over the lower hills in front of it, resembles a fort. (See view on chart 38.) It does not, however, show until bearing less than about 340° .

Bahu or Dashtiāri Chil river, which flows into the bay, about $7\frac{1}{2}$ miles north-eastward of Ras Fastā, is the mouth of two combined streams ; it has a shallow bar, but is deep inside, and is tidal for some distance. The position of the entrance can be identified from a distance by the 10 masts of the dhows anchored within. The only landing for boats is within the entrance.

Gwātar village stands near the mouth of Bahu river.

There is a conspicuous white fort with two towers on the western side of the village. Between it and the river is a small round tower 15 with a tall and conspicuous flagstaff.

After rain, the water is fresh some miles up the river. There are several creeks between the mouth of Bahu river and Khōr Dasht, about 7 miles eastward.

Drabhol kūh (Darabúl), northward of the middle of the bay and 20 about 9 miles inland, is a detached table-topped hill, about 500 feet ($152^{\text{m}4}$) high, with sloping sides.

The depths in the bay, over a mud bottom, decrease regularly from about 6 fathoms ($11^{\text{m}0}$) at the entrance, but, in 1915, they were reported to be less than charted.

25 Khōr Dasht is the mouth of the Dasht river, the largest on this coast ; the river flows south-westward and finally, passes eastward of Drabhol kūh into the head of the khōr. The following is from a report in 1916. "The mouth of the khōr is about 2 cables wide, between flat sandy banks almost awash, on which the latter breaks during the

30 South-west monsoon. The bar and breakers extend about one mile southward from the coast. The passage over the bar is on the eastern side of the breakers. A depth of 4 feet ($1^{\text{m}2}$) can be obtained by keeping a grass-covered sand hill, situated near the shore on the western side of the entrance, in line with the third distant peak westward of

35 Drabhol kūh range, bearing 338° . Course should not be altered up the river until the sandy spit on the eastern bank is well clear of the eastern extremity of Drabhol kūh. For the first two miles the eastern bank should be followed. Above this the greater depths are on the concave sides of the bends in the river. About 10 or 11 miles from

40 the entrance, the depth is only 2 feet ($0^{\text{m}6}$), the tidal rise being from 2 to 3 feet ($0^{\text{m}6}$ to $0^{\text{m}9}$). The river is tidal for about 12 miles from its mouth ; in places it decreases in width to about half a cable and there, when the river is in flood, the depths are from 2 to $3\frac{1}{2}$ fathoms ($3^{\text{m}7}$ to $6^{\text{m}4}$)."

45 Chart 38.

PERSIAN MAKRĀN.—General remarks.—The coast of Persian Makrān extends from the Perso-Kalāt frontier in Gwātar bay (*Lat.* $25^{\circ} 10' N.$, *Long.* $61^{\circ} 33' E.$), westward for about 210 miles to Jāsk. In places it is low, with ranges of mountains some distance inland, but 50 there are many high rocky points and hills near the coast. The country, though barren, is not absolutely desert. There are a number of villages or settlements, but no town of importance, and the population is scanty.

Chart 748b.

Chart 38.

Navigation along this coast is impeded by the land being frequently obscured by dust haze, soundings being then the only guide ; this is especially the case from April to July. Due to this haze, when only about 5 miles offshore and in depths of less than 10 fathoms ($18^{\text{m}}3$), it is often necessary to obtain the position of the vessel by astronomical observations.

Coast.—For about 6 miles west-north-westward of Ras Fastā, the coast is cliffy, thence for 2 miles there is a low gap, where the coast recedes for a short distance, and for the next 7 miles to Ras Bris, ⁵ there are vertical white cliffs with a level summit about 200 feet ($61^{\text{m}}0$) high. From about 3 miles westward of Ras Fastā, the coast is fringed with a shoal gradually increasing in width until at Ras Bris its outer edge lies about one mile offshore.

Ras Bris is at the western end of the white cliffs ; north-eastward of, ¹⁵ and detached from, the latter is a range of white clay hills with very remarkable peaks ; both Ras Bris and the range within it are conspicuous (*see* view on chart 38). Bris, about $1\frac{1}{2}$ miles north-eastward of Ras Bris, is a small fishing village on the shore of a bay on the northern side of the cape. ²⁰

Anchorage may be obtained, in a depth of about 5 fathoms ($9^{\text{m}}1$), sand, in the middle of this bay ; the depths shoal gradually towards the shore.

Between Bris and Siāh (Siya) kūh, about 18 miles west-north-westward, the coast is low and sandy. Siāh kūh, about 1,000 feet ($304^{\text{m}}8$) ²⁵ high, is a dark round hill, situated close to the coast, with cliffs on its seaward side.

From Ras Bris to about 3 miles eastward of Siāh kūh there are depths of 5 fathoms ($9^{\text{m}}1$) about $1\frac{1}{2}$ miles offshore, but depths of 6 fathoms ($11^{\text{m}}0$) were obtained in 1911, about half a mile westward ³⁰ of Ras Bris.

Kochu is a small settlement about 12 miles westward of Bris and there is a large village on the coast, about $1\frac{1}{2}$ miles east-south-eastward of Siāh kūh.

Kinj Dap is a gap in the coastal hills on the western side of Siāh kūh, ³⁵ through which flows a small stream of the same name, the mouth of which is probably usually barred by sand, but after heavy rains in the interior it becomes open ; at its mouth is a grove of acacia trees and on its eastern bank, about $2\frac{1}{2}$ miles from the sea, is the village of Kinj. ⁴⁰

Between Kinj Dap and Chāhbār point (*Lat.* $25^{\circ} 17' N.$, *Long.* $60^{\circ} 36' E.$), about 13 miles west-north-westward, the coast consists of rocky hills and cliffs, gradually decreasing in elevation towards the point. Inland of these coastal hills, a vast plain extends westward for many miles. ⁴⁵

Khāki kūh, north-eastward of Siāh kūh and about 9 miles inland, rises to an elevation of about 2,000 feet ($609^{\text{m}}6$) (*see* view on chart 38). The range extends for some miles eastward and westward, and its southern face is vertical ; its crest is deeply indented, and when seen from westward presents a double peak with a bluff south-eastward of it ; being composed of white clay it is conspicuous when the sun shines on it. ⁵⁰

Between Ras Bris and Chāhbār point, the bottom, in depths of less than 10 fathoms ($18^{\text{m}}3$), is mud.

Chart 748b.

Chart 38.

Two shoals, over each of which there is a depth of $1\frac{1}{2}$ fathoms ($2^{\text{m}}7$), lie close together with their outer edges about $1\frac{1}{2}$ miles northward of Astola island ; the western shoal is connected to the island by a bank and the eastern shoal nearly so ; their northern sides are steep-to, and there is no passage between them and the island except for boats. A shoal, over which there is a depth of $2\frac{1}{2}$ fathoms ($4^{\text{m}}6$), lies nearly 2 miles north-eastward of the eastern end of the island, and is steep-to ; a $2\frac{1}{2}$ -fathom ($4^{\text{m}}1$) patch lies between it and the island.

There is a clear channel, about 7 miles wide, between the shoals extending southward from the mainland and those northward of Astola, with depths in it of from 5 to 8 fathoms ($9^{\text{m}}1$ to $14^{\text{m}}6$), sand, rock, and shells.

15 A 5-fathom ($9^{\text{m}}1$) patch lies about 8 miles east-south-eastward of Ras Jaddi (*Lat. $25^{\circ} 13' N.$, Long. $63^{\circ} 30' E.$*).

If proceeding northward of Astola, which should not be done at night, except under favourable conditions, vessels should keep well clear of it to avoid the outlying shoals.

20 Pasni.—Anchorage.—Pasni, situated on the low western shore of the bay northward of Ras Jaddi, is of considerable importance owing to its proximity to Turbat, the headquarters of the Makrān administration, situated about 50 miles north-north-westward.

A small fort, two mosques, and a bungalow, which serves as the post 25 and telegraph office, are the only permanent buildings, the rest of the town consisting of mat huts.

It is the seaport of Kulānch, a district of Makrān, extending about 120 miles westward from Khōr Kalmat, and is the headquarters of the Nāib of Kulānch.

30 With the exception of a few date palms southward of the town, there is no vegetation in the neighbourhood ; south-westward of the town is a mass of high white sand hills, and northward of these, are a number of shur.

Wool, ghi, cotton, dates, and mats are exported.

35 Anchorage may be obtained, in a depth of about $3\frac{1}{2}$ fathoms ($6^{\text{m}}4$), sand, about $1\frac{1}{2}$ miles offshore, with the town bearing 270° , and Ras Jaddi about 194° , or farther out in depths of 4 fathoms ($7^{\text{m}}3$).

After the month of April, there is considerable surf on the shore of the bay rendering landing difficult.

40 Meteorological table.—See page 40.

Coast.—Between Ras Jaddi and the point about $1\frac{1}{2}$ miles southward, on which is Jabal Zarain, is a small bay, about $1\frac{1}{2}$ cables inland of which is a group of clay hills of fantastic shape about, 150 feet ($45^{\text{m}}7$) high.

45 Jabal Zarain is about 400 feet ($121^{\text{m}}9$) high, brown in colour, and conspicuous ; its shape is similar to that of a barn, especially when seen from westward or eastward ; from southward, it appears as a long notched ridge with sloping ends : at a distance, it appears detached as the land round it is low ; it is steep-to, and there are depths of from 4 to 50 5 fathoms ($7^{\text{m}}3$ to $9^{\text{m}}1$) about one mile offshore. See view on chart 38.

Between a point about 10 miles westward of Jabal Zarain, and Ras Shamāl Bandar, 13 miles westward, the coast, which forms a bay, is low and the coastal bank extends about $1\frac{1}{2}$ miles offshore. Small vessels sometimes take shelter from westerly winds in the western part

Chart 748b.

Chart 38.

of the bay. The coast appears to be bordered by desert, but a short distance inland it is fertile in places.

Chakūlī kūh, a range of mountains about 1,400 feet (428^{m7}) high, is a westerly continuation of the Tālār hills and lies, parallel with the coast, from 8 to 10 miles inland; the western part, separated from the eastern by the Save (Sawur) river, is known as Kūh-i-Darām (see below).

Ras Shamāl Bandar is a bluff, and is the first high land near the coast westward of Jabal Zarain; it should not be approached into depths of less than 6 fathoms (11^{m0}), as a reef, the outer edge of which is steep-to, extends about one mile offshore.

Ras Shāhid (*Lat. 25° 12' N., Long. 62° 59' E.*) lies about 5½ miles west-south-westward of Ras Shamāl Bandar; the coast between these two points and also between the former and Ras Kappar, about 13½ miles westward, rises to a long jagged ridge of precipitous white clay hills, from 400 to 500 feet (121^{m9} to 152^{m4}) high, a short distance inland with low ground behind them; except in a few places, at low water there is no beach on this stretch of coast. Between 6 and 9 miles westward of Ras Shāhid, there are three gaps in the hills, through one of which the Save river flows into a large salt-water creek.

Ras Kappar (Kapar) is the southern extremity of a table-topped hill with bluff ends, nearly 800 feet (243^{m8}) high, situated at the western end of, and partly detached from, the hills extending westward from Ras Shāhid. There are depths of 3 fathoms (5^{m5}) about 3 cables from the point. Kappar is a small village close to the coast near the point.

Mukh, about 17 miles north-westward of Ras Kappar, is a conspicuous peak 2,924 feet (891^{m2}) high, and Barn peak, the summit, 5 miles eastward of it, is 3,152 feet (960^{m7}) high. Lower clay hills rise in front of these mountains.

Dimak kūh, 6 miles westward of Ras Kappar, and a short distance inland, is small, of darker colour than the other hills in the locality, and has several little paps on its summit.

Between Ras Kappar and the point on which lies Jabal Sur (Sar), about 15 miles westward, the coast is sandy and rises to low hills, principally shur; between Jabal Sur and the mainland northward of it there is a small sandy bay. The coastal bank between Ras Kappar and Jabal Sur extends from half a mile to one mile offshore. Karawat river, about 9 miles westward of Ras Kappar, is only a small stream, and is the eastern boundary of the Gwādar territory.

Kūh-i-Darām is a range of mountains lying parallel with the coast, about 12 miles inland, decreasing in height westward, where it ends abruptly in Gar-i-kūh (Garr), a remarkable notch or rather two great vertical steps descending from a height of 1,493 feet (455^{m0}), about 20 miles west-north-westward of Jabal Sur, and forming a good landmark. A wide plain extends from the foot of Kūh-i-Darām to Jabal Mehdi (page 76), and to the root of the isthmus of Gwādar; in this plain, which is cultivated, are some scattered villages.

Sajidi (Saiji) kūh is the summit of a mountain range, extending in an easterly and westerly direction about 20 miles inland, the peaks of which there attain an elevation of 3,126 feet (952^{m8}).

Chart 38, plan of Gwādar bay.

Jabal Sur (*Lat. 25° 13' N., Long. 62° 28' E.*) is a small wedge-shaped white clay hill, 580 feet (170^{m7}) high, rising steeply with a vertical cliff

Chart 748b.

Chart 38, plan of Gwādar bay.

at its eastern end ; the isthmus connecting it to the mainland is low and sandy. See view on chart 38.

Jabal Mehdi, a precipitous white clay ridge with vertical cliffs on its southern side, rises abruptly from the plain at the root of the isthmus and extends westward for about 4 miles from a position about 2 miles westward of Jabal Sur, the land between Jabal Sur and Jabal Mehdi being low. The outline of the ridge is very remarkable ; the highest peak, 1,375 feet ($419^{\text{m}}1$) high, is in the form of a sugar-loaf at its eastern end ; the Asses' ears, 2 miles westward, is a curious double peak, a few feet lower than the summit. From eastward, this ridge, as also Jabal Sur and Gwādar head, appears detached. See view on chart 38.

Gwādar head.—Gwādar head is a rocky peninsula connected to the mainland by a low, narrow, sandy isthmus, on which stands the town of Gwādar, and on the eastern and western sides of which are Gwādar East bay and Gwādar West bay, also known as Demi zar and Padi zar, respectively, both sandy bays.

The headland is faced on all sides with cliffs and its summit slopes down from the highest bluff, which is about 480 feet ($146^{\text{m}}3$) high and is situated at the southern end of the western side of the isthmus. See view on plan on chart 38.

Ras Nūh, the eastern extremity of the headland, is a bluff about 280 feet ($85^{\text{m}}3$) high, about $8\frac{1}{2}$ miles south-westward of Jabal Sur. A temple stands close to the edge of the cliff, at Ras Nūh. With its high white bluffs, the headland is conspicuous from eastward and then appears as a wedge-shaped island ; from southward and south-westward it is not so remarkable, but appears darker in colour than the land behind it. See view on chart 38.

Bandar Hairān, about three quarters of a mile south-westward of Ras Nūh, is a small bay frequented by fishing boats ; the cliffs in the vicinity of the bay are low and the beach is of sand.

Ras Kamaiti (Kamiti), the western extremity of the headland, is a cliff about 70 feet ($21^{\text{m}}3$) high. A small white tomb on the southern edge of the cliff, about half a mile eastward of Ras Kamaiti, is conspicuous from southward when the sun is shining on it.

A rocky spit, with a depth of 4 fathoms ($7^{\text{m}}3$), extends about 9 cables southward from a low rocky point about a quarter of a mile southward of Ras Nūh (*Lat. $25^{\circ} 06' \text{N.}$, Long. $62^{\circ} 23' \text{E.}$*).

Directions.—Tidal streams.—A vessel approaching from eastward should keep in depths of from 10 to 15 fathoms ($18^{\text{m}}3$ to $27^{\text{m}}4$) ; even if the weather is hazy, it would scarcely be possible to pass Gwādar head in these depths without seeing it.

A vessel approaching from westward should not get into depths of less than 12 fathoms ($21^{\text{m}}9$) until Ras Nūh bears less than 350° , particularly in hazy weather.

There is usually a ripple over the rocky spit and, during the Southwest monsoon, it is marked by breakers. There is a depth of 5 fathoms ($9^{\text{m}}1$) about 3 cables eastward of Ras Nūh.

In hazy weather vessels not bound to Gwādar should keep in depths greater than 20 fathoms ($36^{\text{m}}6$).

At night a good look-out should be kept for fishing boats and canoes with their nets out.

The tidal streams off Gwādar head set eastward and westward, and, though their rate is reported to be hardly perceptible, H.M.S.

Chart 38, plan of Gwādar bay.

Crocus, in June, 1927, experienced an east-going current of about 4 knots off Ras Nūh (*Lat.* $25^{\circ} 06' N.$, *Long.* $62^{\circ} 23' E.$), at about one hour before high-water by the shore.

Gwādar East bay.—Dangers.—Gwādar East bay is entered ⁵ between Jabal Sur and Ras Nūh. Except on the northern side of the headland its shores are low and sandy. A flat, over which there are depths of about 2 fathoms (3^m7), extends from one to $2\frac{1}{2}$ miles from the eastern side of the isthmus. It was reported, in 1934, that erosion ¹⁰ of the isthmus is continual and that shoaling was taking place in the bay. Shoals, with depths of 3, $3\frac{1}{2}$ and $5\frac{1}{2}$ fathoms (5^m5 , 5^m9 and 9^m8) over them, lie about $1\frac{1}{2}$ miles northward, $1\frac{1}{2}$ miles north-north-eastward and $1\frac{1}{2}$ miles north-eastward, respectively, of the temple on Ras Nūh.

The bay is well sheltered from south-westerly winds, but during the South-west monsoon, the long swell rounding Ras Nūh causes ¹⁵ vessels at anchor to roll heavily. During easterly winds, communication with the shore is sometimes difficult, but these winds are seldom strong enough to endanger a vessel; during the continuance of such winds a steam vessel might obtain shelter in Gwādar West bay. See ²⁰ page 78.

A boat harbour is formed by a projecting cliffy point, at the southern end of the bay, on the northern side of Gwādar head about $1\frac{1}{2}$ miles westward of Ras Nūh.

There is no proper landing place either in Gwādar East bay or Gwādar West bay, the boats being hauled up on the shelving beach. ²⁵

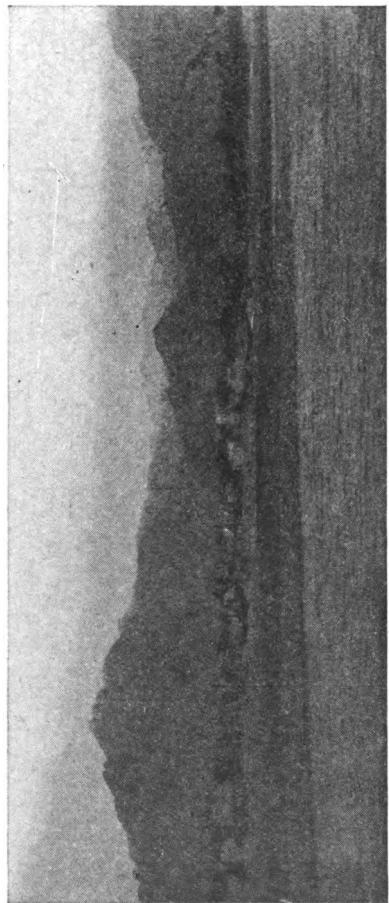
Anchorage.—Directions.—Anchorage may be obtained in Gwādar East bay with the telegraph office at Gwādar bearing between 262° and 250° as close in as the draught of the vessel will permit; the closer the better, both to facilitate communication with the town and to obtain smoother water. ³⁰

Approaching from southward or westward, from a position about 4 miles southward of Ras Nūh, with the western end of Jabal Mehdi ridge bearing less than 348° and open eastward of Ras Nūh, a vessel should steer for the eastern peak of the ridge, bearing less than 005° , until Ras Nūh is abeam, whence she should steer for the anchorage as convenient, taking care to avoid the shoals northward and north-eastward of Ras Nūh, previously mentioned. ³⁵

Gwādar.—This town is situated near the southern end of the sandy isthmus connecting Gwādar head to the mainland. Most of the dwellings are mat huts, but a number of mud and stone buildings, ⁴⁰ amongst which is a conspicuous mosque, are grouped round a square fort with a high tower. Northward of the town is the telegraph office, a large block of buildings, and about half a mile farther northward is the Wali's fort with its flagstaff, which must not be mistaken for the telegraph office. This fort is a large white square building, conspicuous either from eastward or westward. The flagstaff stands on the south-eastern corner of the roof and its truck is about 100 feet (30^m5) in height. About midway between the Wali's fort and the telegraph office are two wireless masts, each 70 feet (21^m3) in height, but they are not conspicuous from eastward or westward as they are ⁴⁵ partially obscured by trees. In the vicinity of the town, there are a few date palms and banyan trees. ⁵⁰

The town and district, the coast of which latter extends from the mouth of Karawat river to the neighbourhood of Ras Pishukān (see

To face page 65.



Khōr al Fākkān from eastward.

(Original dated 1914.)

Chart 2837a.

Anchorage may be obtained off Fujaira, in a depth of 5 fathoms ($9^{\text{m}1}$), about three-quarters of a mile offshore.

A shoal, over which there is a depth of 2 fathoms ($3^{\text{m}7}$), was reported by H.M.S. *Espiegle*, in 1910, in a position about $1\frac{1}{4}$ miles offshore ⁵ eastward of Fujaira ; between the shoal and the coast there are depths of 5 fathoms ($9^{\text{m}1}$).

As Saqamqam, about 3 miles northward of Fujaira, is a small village, the position of which may be identified by a round tower standing some distance inland. Close northward of As Saqamqam is a steep, ¹⁰ black, rocky point between which and Khōr al Fākkān, about 11 miles northward, there are hills estimated to be from 1,000 to 1,500 feet ($304^{\text{m}8}$ to $457^{\text{m}2}$) in height, conforming to the general topography of the coast northward. It was reported in 1938, that the natives at As Saqamqam were friendly. ¹⁵

About 5 miles northward of As Saqamqam is the village of Murba, where it was reported, in 1938, that the natives were friendly.

Good anchorage may be obtained off As Saqamqam, in a depth of 7 fathoms ($12^{\text{m}8}$), about three-quarters of a mile offshore, with the tower bearing 266° and Fujaira fort, 188° . ²⁰

Anchorage may be obtained eastward of Murba, in a depth of 10 fathoms ($18^{\text{m}3}$), about one mile offshore with the southern entrance point of Khōr al Fākkān bearing 000° .

Chart 2837a, plan of Khor Fakkan.

Khōr al Fākkān.—Anchorage.—On the southern shore of this ²⁵ sandy bay is a village with a large date grove (see view facing this page). Immediately southward of the bay is a hilly projection, from 1,000 to 2,000 feet ($304^{\text{m}8}$ to $609^{\text{m}6}$) high, off the north-eastern extremity of which lies Sirat-al-Khor, a peaked islet about 240 feet ($73^{\text{m}2}$) high ; the channel between the islet and the point is about 2 cables wide, ³⁰ with depths in it of about 3 fathoms ($5^{\text{m}5}$). Khōr al Fākkān is entered between this islet and Ras Luluiya, a rocky point, situated about $1\frac{1}{2}$ miles north-westward.

Anchorage may be obtained, in a depth of 6 fathoms ($11^{\text{m}0}$), sand, about half a mile offshore north-north-eastward of the village, but ³⁵ it is open to the nashi.

It is reported that anchorage, which provides some shelter from the shamāl, may also be obtained, in a depth of about 4 fathoms ($7^{\text{m}3}$), in a position about 2 cables southward of Ras Luluiya (*Lat. $25^{\circ} 23' N.$, Long. $56^{\circ} 22' E.$*). ⁴⁰

About 3 cables eastward of the village and northward of a cliffy point, on which are two ruined towers, is the entrance to a small cove with a sandy beach at its head ; there are depths of 3 fathoms ($5^{\text{m}5}$) in the entrance, and within it small boats can find sheltered anchorage.

A conspicuous tower stands, at an elevation of 268 feet ($81^{\text{m}7}$), ⁴⁵ about 4 cables southward of the village.

The natives were reported to be friendly when visited by H.M.I.S. *Clive*, in 1938.

Chart 753.

Coast.—The coast for 4 miles northward of Ras Luluiya is low, ⁵⁰ sandy, and bordered with date groves, the mountains being only a short distance inland. Zubāra is a small village about $1\frac{1}{4}$ miles northward of Ras Luluiya. Al Badi, an islet, about 200 feet ($61^{\text{m}0}$) high, lies close offshore about $1\frac{1}{2}$ miles northward of Zubāra ; on the coast,

Chart 753.

at a short distance northward of the islet, is a village of the same name.

Sharam (Karam), Dhadna (Zadna), and Rūl Dhadna (Ruwul Zadna) ⁵ are three villages situated on the coast, respectively, about 2, 7 $\frac{1}{4}$, and 8 $\frac{1}{2}$ miles northward of Al Badi. This part of the coast consists of rocky points alternating with sandy bays, the mountains rising abruptly at a short distance inland.

Ras Dibba (Dibah), about 1 $\frac{1}{2}$ miles northward of Rūl Dhadna, is a ¹⁰ projecting point consisting of cliffs of moderate height; about half a mile northward of the point is an islet, the depths in the intervening channel being about 2 fathoms (3 m^7); there is a sand bluff in the cliffs about one mile westward of the point, which is conspicuous from northward but cannot be seen from eastward.

¹⁵ Dōhat Dibba (Dibah).—Anchorage.—This bay is entered between Ras Dibba and Ras Suwat, a rocky point, to which slope down three spurs of the mountain range, situated about 5 $\frac{1}{2}$ miles north-westward; it is open from north-north-east to east, and the depths decrease regularly from 15 fathoms (27 m^4), in the entrance, to the sandy beach.

²⁰ It was reported in 1931 that, between the sand bluff mentioned in the previous paragraph and the Shaikh's fort, about 3 $\frac{1}{2}$ miles west-north-westward, the shore of the bay recedes considerably more than is indicated on the chart.

Dibba (Dibah) town is situated at the head of the bay about 5 miles ²⁵ west-north-westward of Ras Dibba, and in it are two forts, only the southern of which can be seen from seaward. There are extensive date plantations in the valley southward of the town and all along the shore of the bay, which greatly obscure the view of the town from seaward. The Shaikh's fort, the southern one, is situated close to ³⁰ the beach in front of the date palms; it is small but conspicuous.

Anchorage was obtained by H.M.S. *Cyclamen*, in October, 1930, in a depth of about 5 $\frac{1}{2}$ fathoms (10 m^1), with the Shaikh's fort bearing 250°, distant 6 $\frac{1}{2}$ cables. In 1931, H.M.S. *Penzance* anchored in a depth of 4 fathoms (7 m^3), sand, with the fort bearing 230°, distant ³⁵ 4 cables.

Landing may be effected in fine weather on the sandy beach at the head of the bay.

The village of Al Karsha (*Lat. 25° 40' N., Long. 56° 17' E.*), about 2 $\frac{1}{2}$ miles northward of the Shaikh's fort at Dibba, is in the district of ⁴⁰ Ruūs al Jibāl, the boundary running inland from a position between the two villages.

For the coast of Ruūs al Jibāl, see page 90.

CHAPTER III

APPROACHES TO THE PERSIAN GULF FROM EASTWARD—COASTS OF LAS BĒLA, MAKRĀN, AND PERSIAN MAKRĀN, INCLUDING JĀSK—CAPE MONZE TO JĀSK.

Chart 38.

COAST OF LAS BĒLA.—The coast of Las Bēla extends from the frontier of British India, at the mouth of the Hab river, northward and north-westward for about 50 miles, and thence westward for about 125 miles to Khōr Kalmat. It is chiefly an uninhabited wilderness of hills and cliffs, at the foot of which are swamps or desert plains. Very few supplies can be obtained from the villages.

Chart 41.

Cape Monze.—**Light.**—**Off-lying dangers.**—This cape (*Lat. 24° 50' N., Long. 66° 39' E.*), also known as Ras Muāri, is the western extremity of a sloping headland which rises to a pointed summit, at an elevation of about 460 feet (140^m2), about 17 miles westward of Manora point, at the entrance of Karachi harbour. *See* West Coast of India Pilot.

Jhil range, an offshoot of Kirthar range, is a ridge with a nearly level crest, but on which are some remarkable hummocks, the highest having an elevation of 776 feet (236^m5); it extends about 10 miles north-eastward from Cape Monze; for about the first 3 miles eastward of the cape, the hills slope down to the coast, but then turn inland and at about 5 miles farther eastward the coast becomes low. *See* view 20 on chart 41.

A light is exhibited, at an elevation of 162 feet (49^m4), from a black concrete tower, with white bands, 168 feet (51^m2) in height, situated on the coast about one mile south-eastward of Cape Monze.

A shoal spit, over which there is a depth of 3½ fathoms (6^m4), extends about one mile south-westward from the coast in the vicinity of the lighthouse. Nancowry shoal, over which there is a depth of 4 fathoms (7^m3), rock, lies about 1½ miles south-westward of the lighthouse; and a spit, over which the depths are from 6½ to 10 fathoms (11^m9 to 18^m3), extends about 1½ miles farther in that direction.

Foul ground extends about 6 cables offshore between the shoal spit and Cape Monze, and a 3-fathom (5^m5) patch lies on its edge west-south-westward of the cape.

Beauchamp reef, over which there is a depth of 5 fathoms (9^m1), coral, lies about 3½ miles westward of Cape Monze; foul ground, over

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Charts 38, 748b.

Chart 41.

which there are depths of from 7 to 9 fathoms (12^m8 to 16^m5), extends about half a mile south-south-eastward and one mile north-north-westward from the reef.

5 Churma island, about 4 miles north-westward of Cape Monze, is about 580 feet (176^m8) high; from southward, its almost precipitous light-coloured hills appear to rise to a peak, but from westward, it looks like a flat-topped hill with sloping sides. The island is steep-to, barren, and uninhabited.

10 Anchorage may be obtained, in a depth of 5 fathoms (9^m1), sand, about 2 cables offshore, with the summit of Churma island bearing about 225° .

On the northern side of Cape Monze is a small bay with a sandy beach to which a valley descends between the Jhil range and some 15 detached hills, about 580 feet (170^m7) high. The seaward side of these hills, which extend to the mouth of the Hab river, is cliffy. Foul ground extends about one mile offshore for over 2 miles northward of Cape Monze.

20 Southward of Cape Monze, in depths greater than 20 fathoms (36^m6), and eastward of it, in depths greater than 10 fathoms (18^m3), the bottom is everywhere soft.

Chart 38.

Sonmiāni bay.—Dangers.—This bay is entered between Cape Monze and Ras Kachari (Kuchar), about 60 miles north-westward. 25 For 20 miles northward of Cape Monze the shore of the bay is indented between rocky points, thence north-westward and westward it becomes sandy and covered with low jungle, with sand hills in places.

Pab mountains rise on the northern bank of the Hab river, about 10 miles north-eastward of Cape Monze (*Lat. $24^\circ 50' N.$, Long. $66^\circ 39' E.$*) and extend north-eastward and northward, gradually increasing in elevation to over 3,000 feet (914^m4). Westward of these mountains is a plain, about 35 miles wide, which extends to the foot of the Haro range. This plain is drained by the Purali river which flows through a swamp into the sea at the head of the bay. The Haro range, which 35 is of light colour and irregular outline, trends north-north-eastward from the northern shore of the bay, and at its southern end attains an elevation of about 3,150 feet (960^m1).

The town of Sonmiāni is the seaport of Bēla, and stands on the eastern bank, about 4 cables within the entrance of Purali river. The 40 town is difficult to identify from seaward on account of its low position and dull appearance. Bēla, the capital of the State of Las Bēlas, stands in the valley, about 65 miles by road northward of Sonmiāni.

Hab river flows into the sea about $3\frac{1}{2}$ miles north-north-eastward of Cape Monze. There is no fresh water within several miles of its mouth, 45 except during freshets. The rocky hills on its southern side end about one mile within its mouth, above which there is a plain on each side of the river. The northern side of the entrance of the river is low, and a sandy spit extends nearly across the channel. A small isolated rocky hill stands on the northern side, a short distance inland.

50 The channel of the Hab river is tidal, and nearly dries; it has depths in it of 9 feet (2^m7) at high water, and, usually, there are breakers across the entrance. The channel outside high-water mark shifts, but is practicable for a ship's boat. The tidal influence does not extend more than about 2 miles inside the mouth of the river.

Chart 748b.

Chart 38.

The vicinity of the mouth of the Hab has only been partially examined.

For about 3 miles northward of the northern entrance point of the river, the coast is low ; about 2 miles farther northward is Chir Churna, a detached, square, rocky hill, about 100 feet ($30^{\text{m}} 5$) high, joined to the mainland by a low sandy isthmus. 5

A shoal, over which there is a depth of $1\frac{1}{2}$ fathoms ($3^{\text{m}} 2$), lies about $1\frac{1}{2}$ miles westward of the northern entrance point of the Hab river, and a shoal, with a depth of 3 fathoms ($5^{\text{m}} 5$), lies about $3\frac{1}{2}$ miles northward of the same point. About $1\frac{1}{2}$ miles farther northward, and about one mile offshore, is a sunken rock. There are depths of from 4 to 6 fathoms ($7^{\text{m}} 3$ to $11^{\text{m}} 0$) round both the 3-fathom ($5^{\text{m}} 5$) shoal and the sunken rock. 10

A low rocky islet lies about three-quarters of a mile north-westward 15 of Chir Churna, with depths of 7 fathoms ($12^{\text{m}} 8$) close seaward of it, and 5 fathoms ($9^{\text{m}} 1$) between it and the land.

Within a distance of about 6 miles north-north-eastward of Chir Churna are three small bays separated by high rocky points. Inland of the southernmost of these bays are backwaters, one of which has 20 an entrance close eastward of Chir Churna ; from these backwaters, the ground rises abruptly to the southern part of the Pab range. For 3 miles northward of Chir Churna the coast is hilly, thence to the entrance of Sonmiāni harbour, about 22 miles north-north-westward of Chir Churna (*Lat. $25^{\circ} 01' N.$, Long. $66^{\circ} 42' E.$*), the coast is bordered 25 by sand hillocks covered with tufts of grass and small bushes.

Chart 38, plan of Sonmiyáni harbour.

Sonmiāni harbour.—The entrance to Sonmiāni harbour is nearly 2 miles wide, and on the bar there is a depth of about $1\frac{1}{2}$ fathoms ($2^{\text{m}} 3$), though in the channel inside there are depths of from $3\frac{1}{4}$ to 6 fathoms 30 ($5^{\text{m}} 9$ to $11^{\text{m}} 0$) close to the eastern entrance point where its width is about $1\frac{1}{2}$ cables. On approaching the town the depths in the channel decrease considerably.

A shoal flat, on which the sea breaks heavily, extends nearly $2\frac{1}{2}$ miles outside the entrance, and through it winds the entrance channel ; 35 there are depths of 4 fathoms ($7^{\text{m}} 3$) close to the outer edge of the shoal.

The eastern entrance point is composed of sandy hillocks, thinly covered with tamarisk bushes, and between it and the town is a mud flat, which mostly dries, and over which the Windar (Vindar) river, flowing south-westward, discharges during floods. 40

The western entrance point consists of low bare sand hills.

Westward of the harbour is a vast swamp, which extends within the coastal sand hills almost to the foot of the Haro range, and at high water is partly covered. During heavy rains, the Purali river discharges into the northern part of the swamp, though, being dammed 45 about 20 miles inland, its waters are usually absorbed in irrigation.

The harbour is only used by native craft. Vessels wishing to communicate should anchor off the bar, in a depth of not less than 5 fathoms ($9^{\text{m}} 1$), with Churma island bearing about 173° .

Caution.—As the information given above is from a survey made 50 many years ago, great care should be taken when approaching this vicinity.

Chart 38.

Northern shore of Sonmiāni bay.—Anchorage.—The northern

Chart 748b.

Chart 38.

shore of Sonmiāni bay from the western entrance point of Sonmiāni harbour is low with sand hillocks, on which are tufts of grass, to the Haro range, about 24 miles westward, whence again it is low to Chandragup

5 (Darya cham), 13 miles farther westward. The depths offshore are regular, and the coast can be approached into a depth of 6 fathoms (11^m0), there being depths of 3 fathoms (5^m6) from one to 2 miles offshore.

Phor (Pur) river enters the sea about 33 miles westward of Sonmiāni 10 harbour ; its mouth is a small salt-water creek, into which, during the rains, flows the river which drains the valley westward of the Haro range.

Anchorage could be obtained, in a depth of 5 fathoms (9^m1), in the bay westward of the mouth of Phor river, but a depth of 3½ fathoms (6^m4) is charted about 2½ miles offshore, nearly 6 miles south-westward 15 of the mouth of the river.

Chandragup (*Lat. 25° 26' N., Long. 65° 50' E.*), the eastern of a detached group of low hills near the middle of the southern part of a plain extending westward from the Haro range for about 30 miles, is situated about 2 miles inland, 4½ miles west-north-westward of the 20 mouth of Phor river ; it consists of several white conical hillocks, the highest of which attains an elevation of about 300 feet (91^m4).

Ras Kachari is the south-eastern extremity of some low cliffs, above which rise the detached group of hills, of which Chandragup is the easternmost.

25 **Tidal streams.**—In Sonmiāni bay, the tidal streams are weak and set eastward and westward, following the curve of the land.

Coast.—Aspect.—Danger.—Between the Haro range and Ras Malān, about 30 miles westward of Ras Kachari, the coast appears from seaward as a succession of rugged mountains, generally of light colour, 30 with lower whitish-clay peaks, called "shur" by the natives, in front of them. Jabal Hinglāj, 20 miles west-north-westward of Ras Kachari, and 8 miles inland, is about 3,500 feet (1006^m8) high, and wedge-shaped (*see* view on chart 38). Gurangatti (Gorangati), 8 miles farther west-north-westward, with a valley between, is a conspicuous 35 square-topped mountain, about 3,800 feet (1158^m2) high, resembling a castle with bastions, its sides appearing almost vertical. From Jabal Hinglāj, the Halā (Hara) range, of irregular outline and with lower hills in front, trends east-north-eastward from 8 to 12 miles inland, until about 5 miles from the Haro range, where it turns north-north- 40 eastward, parallel with the latter.

Westward of Ras Kachari, the coast is low. Jabal Ghurāb, situated near the coast about 2½ miles westward of Ras Kachari, is small and oblong.

A shoal bank extends about 2½ miles offshore in the vicinity of 45 Jabal Ghurāb, with depths of 6 fathoms (11^m0) close to its outer edge.

Jazirat Chahārdam, on the coast about 3 miles westward of Jabal Ghurāb, consists of some rocks from 20 to 30 feet (8^m1 to 9^m1) high, and somewhat higher than the coast in the vicinity ; there is good landing for a boat inside these rocks. For about 12 miles westward of 50 the rocks as far as Jabal Hab, a ridge of hills, about 250 feet (76^m2) high, slopes down to the coast and forms a small point about 2 miles farther westward.

Hingol (Hingor) river, the mouth of which is situated about 2 miles eastward of Jabal Hab, can be entered at high water by small craft

Chart 748b.

Chart 38.

with a draught of 6 feet (1^m8). The river, the bed of which dries in many places, brings down quantities of driftwood during freshets ; it winds round the eastern side of Jabal Hinglāj, and through a gap in Jabal Hab. Eastward of the river, the plain within the coastal sand hills is swampy after rain. 5

Westward of Jabal Hab, low sand hills border the coast for about 12 miles to the cliffs of Ras Malān (*Lat. 25° 19' N., Long. 65° 13' E.*)

Ras Malān, about 14 miles west-south-westward of Jabal Hab, is a prominent bluff with a steep face on its seaward side and a level 10 summit of clay capped with limestone. The highest part, about 4 miles northward of the bluff, attains an elevation of about 2,050 feet (624^m8), with cliffs rising to it abruptly from the sea, there being no beach. Great masses of clay, detached from the mountain side, frequently fall. From seaward, the bluff appears as a long light-coloured 15 tableland ending in cliffs ; between it and Jabal Hinglāj is a confused mass of lower hills and shur. There is a depth of 4 fathoms (7^m3) about one mile south-eastward of the bluff. The locality is uninhabited.

Anchorage.—Anchorage may be obtained in the bay eastward of Ras Malān, in a depth of about 4 fathoms (7^m3), about one mile offshore, 20 with Gurangatti bearing about 000° , and Ras Malān 230° , but the depths appear to shoal close inshore of this position.

Coast.—For a distance of about 19 miles westward of Ras Malān the coast is clifly ; thence it is low and sandy for about 15 miles to Ormāra isthmus, with a plain inland. The high land westward of Ras 25 Malān, known as Batt, is intersected 7 miles from the point by the Hor Batt, a salt-water lagoon, with a sandy bar between it and the sea, into which a great water-course runs through a gorge in the mountains. The mountains become lower westward of the lagoon.

The plain westward of Batt extends about 10 miles inland to the 30 Tālo (Tallu) hills, a range running eastward to Gurangatti in several ridges nearly parallel with the coast. On this plain, northward of the eastern extremity of Ras Ormāra, and 4 miles inland, is Chandra kūp, a conspicuous white cone, about 600 feet (182^m9) high, with a mud crater. 35

Khōr Maniji, 20 miles westward of Ras Malān, is shallow, but, for a short time after rains, it becomes the mouth of a small river. Khōr Gurād, about 5 miles farther westward, is similar ; both are visited by native boats.

Ras Ormāra.—This mountainous peninsula is 1,400 feet (426^m7) 40 high ; the top slopes gently eastward and southward, and ends on all sides in cliffs ; from southward, the peninsula appears wedge-shaped. It is of similar geological formation to the other ranges on the coast, and is only accessible with great difficulty. The sandy isthmus connecting the middle of the peninsula to the mainland extends about 45 5 miles southward from the coast ; on its southern part is Ormāra village. Northward of the village, there are high sand hills in the middle of the isthmus, but the beach on each side is low.

Two rocks were reported, in 1921, to lie about $3\frac{1}{2}$ cables south-westward of the south-western extremity of Ras Ormāra. 50

Ormāra village, situated on the eastern beach of the isthmus, about one mile from the cliffs, consists of a few stone houses and mosques, and some mat huts.

Ormāra is connected to the general telegraph system.

Chart 748b.

Chart 38.

Anchorages.—Demi zar or Ormāra East bay, on the eastern side of Ormāra isthmus, is the usual anchorage for vessels ; it has a sandy bottom, except near the cliffs, and is shallow off the village. Anchorage may be obtained, in a depth of $3\frac{1}{2}$ fathoms ($6^{\text{m}}4$), about $2\frac{1}{2}$ miles from the village, with the eastern extremity of Ras Ormāra, which is about 500 feet ($152^{\text{m}}4$) high, bearing 151° , and the telegraph office, situated about one mile westward of the village, bearing about 261° . The depths shoal regularly when entering the bay, and the eastern bluff point may be approached to a distance of about half mile. The beach dries a long way off the village, making landing inconvenient at low water ; a shoal extends from the northern side of the cliffs of Ras Ormāra (*Lat. $25^\circ 10' N.$, Long. $64^\circ 37' E.$*).

The bay is open to easterly winds, which may blow strongly. During the South-west monsoon there is usually at least one blow from eastward, with rain, which is not of long duration ; Padi zar is then the best anchorage, though communication with the shore is more tedious. Native craft appear always to ride out these breezes. In the South-west monsoon, and at any time after April, a long swell sets round the point into Demi zar, raising a surf on the beach and causing vessels at anchor to roll heavily.

The tidal streams in the bay are weak, and set north-eastward and south-westward following the curve of the land.

Padi zar or Ormāra West bay, on the western side of Ormāra isthmus, is entered between the western extremity of Ras Ormāra and the high cliffs of Ras Sakanni, about 8 miles west-north-westward. The shores are low and sandy ; at its head, and about 5 miles from the village, is a small rocky hill near the coast. The bay is seldom visited, being open south-westward and westward. There are depths of less than 3 fathoms ($5^{\text{m}}5$) within 3 miles of the eastern and northern shores of the bay. The anchorage is with the western extremity of the peninsula bearing about 180° .

Meteorological table.—See page 39.

Coast.—Between Ras Sakanni and Ras Basöl (Basul), about 10 miles west-north-westward, the coast is bordered by continuous cliffs, about 800 feet ($243^{\text{m}}8$) high, of light colour and irregular outline, without any marked peak ; the cliffs are the sea face of the Kamgar hills, between which and the Tälö hills, is a wide plain. Ras Basöl lies at the western end of these cliffs. The bay entered between Ras Basöl and Khör Kalmat, about 10 miles west-north-westward, is shallow, with a low sandy shore.

About 2 miles north-westward of Ras Basöl is the mouth of Basöl river ; this river flows from the interior between the Tälö and Tälär ranges ; the land in the vicinity of its mouth, is swampy and very low.

The Tälär hills trend east-north-eastward from about 10 miles north-westward of the entrance of Khör Kalmat, and approach the western part of the Tälö hills.

In Khör Kalmat, the largest inlet on the coast, there are depths of 5 and 6 fathoms ($9^{\text{m}}1$ and $11^{\text{m}}0$) ; it is of considerable width, but on the bar there is a depth of only 2 feet ($0^{\text{m}}6$). The entrance is rendered difficult by rocks lying upwards of one mile outside the bar, and the tidal streams in the entrance are strong. The land near the entrance is very low, with mangrove swamps. Native craft of 9 feet ($2^{\text{m}}7$) draught are reported to enter the inlet by the eastern of the two

Chart 748b.

Chart 38.

channels over the bar. Inside the bar there are depths of from 4 to 7 fathoms ($7^{\text{m}}3$ to $12^{\text{m}}8$). At some distance inside the inlet are four creeks, which, beyond the range of the tides, form the mouths of water-courses.

Tad, situated on the western side of the khōr, contains a few houses, the only permanent habitations in the neighbourhood.

COAST OF MAKRĀN.—The coast of Makrān extends in a general westerly direction from Khōr Kalmat (*Lat. 25° 19' N., Long. 64° 04' E.*) to the frontier of Persian Makrān, a distance of nearly 10 140 miles. Very few supplies can be obtained from the villages.

For 12 miles westward of Khōr Kalmat the coast is low, the coastal bank, with depths of less than 3 fathoms ($5^{\text{m}}5$), extending about 3 miles offshore; thence, gradually becoming higher, the coast is backed for the next 18 miles by a number of shur; thence to near Pasni, about 15 3 miles north-westward of Ras Jaddi, situated 30 miles west-south-westward of Khōr Kalmat, the coast is barren. There is a small boat harbour about 25 miles westward of Khōr Kalmat. A rocky spit, with a depth of 4 fathoms ($7^{\text{m}}3$) close off it, extends about half a mile eastward from Ras Jaddi.

Shādi khōr is a large shallow creek with swampy banks, the entrance of which is situated about 2 miles north-eastward of Pasni; on the southern side of the mouth of the creek is a projecting point, and drying banks extend about 6 cables offshore. A river flows into the head of the khōr. Boats can enter the khōr at high water.

Local weather.—For weather on the coast of Makrān see page 27.

Off-lying island and dangers.—Astola or Astalū island, about 19 miles east-south-eastward of Ras Jaddi, is 260 feet ($79^{\text{m}}2$) high at its western end, table-topped and bordered by cliffs all round. The cliffs are vertical, except on the northern side of the island, where, about 30 the middle, there is a little sandy point, and, at the north-western corner, where there is a sandy spit and a small boat harbour.

There are rocky ledges off both ends and some detached rocks above water along the southern coast, but all are within 2 cables of the cliffs.

Astola island is covered with a luxuriant growth of rank grass and 35 low shrubs, and abounds with small venomous snakes, called "gar" by the natives.

The island is a place of pilgrimage for the Hindus and Pasni Meds, who land at the north-eastern point of the island, whence the ascent is steep and tortuous.

Webb bank, with a least known depth of $3\frac{1}{2}$ fathoms ($6^{\text{m}}4$), rock, and which breaks during the South-west monsoon, lies about 5 miles south-south-eastward of Astola island. Sail rock, known to the local fishermen as Gurāb, lies 7 cables southward of the middle of the southern side of Astola island; it is 20 feet ($6^{\text{m}}1$) high, steep-to, and appears 45 like a boat under sail; vessels should not pass between the rock and the island.

The channel between Sail rock and Webb bank is apparently clear, but the bottom is uneven, breakers were reported, in 1922, and there are depths of 5 fathoms ($9^{\text{m}}1$), rocks, in places.

Breakers were observed, in 1922, in two positions about 6 miles westward of Webb bank. A wide berth should, therefore, be given to this locality.

Chart 748b.

Chart 38.

Two shoals, over each of which there is a depth of $1\frac{1}{2}$ fathoms ($9^{\text{m}}7$), lie close together with their outer edges about $1\frac{1}{2}$ miles northward of Astola island ; the western shoal is connected to the island by a bank and the eastern shoal nearly so ; their northern sides are steep-to, and there is no passage between them and the island except for boats. A shoal, over which there is a depth of $2\frac{1}{2}$ fathoms ($4^{\text{m}}6$), lies nearly 2 miles north-eastward of the eastern end of the island, and is steep-to ; a $\frac{1}{2}$ -fathom ($4^{\text{m}}1$) patch lies between it and the island.

There is a clear channel, about 7 miles wide, between the shoals extending southward from the mainland and those northward of Astola, with depths in it of from 5 to 8 fathoms ($9^{\text{m}}1$ to $14^{\text{m}}6$), sand, rock, and shells.

15 A 5-fathom ($9^{\text{m}}1$) patch lies about 8 miles east-south-eastward of Ras Jaddi (*Lat.* $25^{\circ} 13' N.$, *Long.* $63^{\circ} 30' E.$).

If proceeding northward of Astola, which should not be done at night, except under favourable conditions, vessels should keep well clear of it to avoid the outlying shoals.

20 Pasni.—Anchorage.—Pasni, situated on the low western shore of the bay northward of Ras Jaddi, is of considerable importance owing to its proximity to Turbat, the headquarters of the Makrān administration, situated about 50 miles north-north-westward.

A small fort, two mosques, and a bungalow, which serves as the post and telegraph office, are the only permanent buildings, the rest of the town consisting of mat huts.

It is the seaport of Kulānch, a district of Makrān, extending about 120 miles westward from Khōr Kalmat, and is the headquarters of the Naib of Kulānch.

30 With the exception of a few date palms southward of the town, there is no vegetation in the neighbourhood ; south-westward of the town is a mass of high white sand hills, and northward of these, are a number of shur.

Wool, ghi, cotton, dates, and mats are exported.

35 Anchorage may be obtained, in a depth of about $3\frac{1}{2}$ fathoms ($6^{\text{m}}4$), sand; about $1\frac{1}{2}$ miles offshore, with the town bearing 270° , and Ras Jaddi about 194° , or farther out in depths of 4 fathoms ($7^{\text{m}}3$).

After the month of April, there is considerable surf on the shore of the bay rendering landing difficult.

40 Meteorological table.—See page 40.

Coast.—Between Ras Jaddi and the point about $1\frac{1}{2}$ miles southward, on which is Jabal Zarain, is a small bay, about $1\frac{1}{2}$ cables inland of which is a group of clay hills of fantastic shape about, 150 feet ($45^{\text{m}}7$) high.

45 Jabal Zarain is about 400 feet ($121^{\text{m}}9$) high, brown in colour, and conspicuous ; its shape is similar to that of a barn, especially when seen from westward or eastward ; from southward, it appears as a long notched ridge with sloping ends : at a distance, it appears detached as the land round it is low ; it is steep-to, and there are depths of from 4 to 5 fathoms ($7^{\text{m}}3$ to $9^{\text{m}}1$) about one mile offshore. See view on chart 38.

Between a point about 10 miles westward of Jabal Zarain, and Ras Shamāl Bandar, 13 miles westward, the coast, which forms a bay, is low and the coastal bank extends about $1\frac{1}{2}$ miles offshore. Small vessels sometimes take shelter from westerly winds in the western part

Chart 748b.

Chart 38.

of the bay. The coast appears to be bordered by desert, but a short distance inland it is fertile in places.

Chakfūlī kūh, a range of mountains about 1,400 feet (426^m7) high, is a westerly continuation of the Tālār hills and lies, parallel with the coast, from 8 to 10 miles inland; the western part, separated from the eastern by the Save (Sawur) river, is known as Kūh-i-Darām (see below). 5

Ras Shamāl Bandar is a bluff, and is the first high land near the coast westward of Jabal Zarain; it should not be approached into depths of less than 6 fathoms (11^m0), as a reef, the outer edge of which is steep-to, extends about one mile offshore. 10

Ras Shāhid (*Lat. 25° 12' N., Long. 62° 59' E.*) lies about 5½ miles west-south-westward of Ras Shamāl Bandar; the coast between these two points and also between the former and Ras Kappar, about 15 13½ miles westward, rises to a long jagged ridge of precipitous white clay hills, from 400 to 500 feet (121^m9 to 152^m4) high, a short distance inland with low ground behind them; except in a few places, at low water there is no beach on this stretch of coast. Between 6 and 9 miles westward of Ras Shāhid, there are three gaps in the hills, 20 through one of which the Save river flows into a large salt-water creek.

Ras Kappar (Kapar) is the southern extremity of a table-topped hill with bluff ends, nearly 800 feet (243^m8) high, situated at the western end of, and partly detached from, the hills extending westward from Ras Shāhid. There are depths of 3 fathoms (5^m5) about 3 cables from 25 the point. Kappar is a small village close to the coast near the point.

Mukh, about 17 miles north-westward of Ras Kappar, is a conspicuous peak 2,924 feet (891^m2) high, and Barn peak, the summit, 5 miles eastward of it, is 3,152 feet (980^m7) high. Lower clay hills rise in front of these mountains. 30

Dimak kūh, 6 miles westward of Ras Kappar, and a short distance inland, is small, of darker colour than the other hills in the locality, and has several little paps on its summit.

Between Ras Kappar and the point on which lies Jabal Sur (Sar), about 15 miles westward, the coast is sandy and rises to low hills, 35 principally shur; between Jabal Sur and the mainland northward of it there is a small sandy bay. The coastal bank between Ras Kappar and Jabal Sur extends from half a mile to one mile offshore. Karawat river, about 9 miles westward of Ras Kappar, is only a small stream, and is the eastern boundary of the Gwādar territory. 40

Kūh-i-Darām is a range of mountains lying parallel with the coast, about 12 miles inland, decreasing in height westward, where it ends abruptly in Gar-i-kūh (Garr), a remarkable notch or rather two great vertical steps descending from a height of 1,493 feet (455^m0), about 20 miles west-north-westward of Jabal Sur, and forming a good landmark. A wide plain extends from the foot of Kūh-i-Darām to Jabal Mehdi (page 76), and to the root of the isthmus of Gwādar; in this plain, which is cultivated, are some scattered villages. 45

Sajidi (Saiji) kūh is the summit of a mountain range, extending in an easterly and westerly direction about 20 miles inland, the peaks of which there attain an elevation of 3,126 feet (952^m8). 50

Chart 38, plan of Gwādar bay.

Jabal Sur (*Lat. 25° 13' N., Long. 62° 28' E.*) is a small wedge-shaped white clay hill, 580 feet (170^m7) high, rising steeply with a vertical cliff

Chart 748b.

Chart 38, plan of Gwādar bay.

at its eastern end ; the isthmus connecting it to the mainland is low and sandy. See view on chart 38.

Jabal Mehdi, a precipitous white clay ridge with vertical cliffs on its southern side, rises abruptly from the plain at the root of the isthmus and extends westward for about 4 miles from a position about 2 miles westward of Jabal Sur, the land between Jabal Sur and Jabal Mehdi being low. The outline of the ridge is very remarkable ; the highest peak, 1,375 feet ($419^{\text{m}}1$) high, is in the form of a sugar-loaf at its eastern end ; the Asses' ears, 2 miles westward, is a curious double peak, a few feet lower than the summit. From eastward, this ridge, as also Jabal Sur and Gwādar head, appears detached. See view on chart 38.

Gwādar head.—Gwādar head is a rocky peninsula connected to the mainland by a low, narrow, sandy isthmus, on which stands the town of Gwādar, and on the eastern and western sides of which are Gwādar East bay and Gwādar West bay, also known as Demi zar and Padi zar, respectively, both sandy bays.

The headland is faced on all sides with cliffs and its summit slopes down from the highest bluff, which is about 480 feet ($146^{\text{m}}3$) high and is situated at the southern end of the western side of the isthmus. See view on plan on chart 38.

Ras Nūh, the eastern extremity of the headland, is a bluff about 280 feet ($85^{\text{m}}3$) high, about $8\frac{1}{2}$ miles south-westward of Jabal Sur. A temple stands close to the edge of the cliff, at Ras Nūh. With its high white bluffs, the headland is conspicuous from eastward and then appears as a wedge-shaped island ; from southward and south-westward it is not so remarkable, but appears darker in colour than the land behind it. See view on chart 38.

Bandar Hairān, about three quarters of a mile south-westward of Ras Nūh, is a small bay frequented by fishing boats ; the cliffs in the vicinity of the bay are low and the beach is of sand.

Ras Kamaiti (Kamiti), the western extremity of the headland, is a cliff about 70 feet ($21^{\text{m}}3$) high. A small white tomb on the southern edge of the cliff, about half a mile eastward of Ras Kamaiti, is conspicuous from southward when the sun is shining on it.

A rocky spit, with a depth of 4 fathoms ($7^{\text{m}}3$), extends about 9 cables southward from a low rocky point about a quarter of a mile southward of Ras Nūh (*Lat. 26° 06' N., Long. 62° 23' E.*).

Directions.—Tidal streams.—A vessel approaching from eastward should keep in depths of from 10 to 15 fathoms ($18^{\text{m}}3$ to $27^{\text{m}}4$) ; even if the weather is hazy, it would scarcely be possible to pass Gwādar head in these depths without seeing it.

A vessel approaching from westward should not get into depths of less than 12 fathoms ($21^{\text{m}}9$) until Ras Nūh bears less than 350° , particularly in hazy weather.

There is usually a ripple over the rocky spit and, during the Southwest monsoon, it is marked by breakers. There is a depth of 5 fathoms ($9^{\text{m}}1$) about 3 cables eastward of Ras Nūh.

In hazy weather vessels not bound to Gwādar should keep in depths greater than 20 fathoms ($36^{\text{m}}6$).

At night a good look-out should be kept for fishing boats and canoes with their nets out.

The tidal streams off Gwādar head set eastward and westward, and, though their rate is reported to be hardly perceptible, H.M.S.

Chart 38, plan of Gwādar bay.

Crocus, in June, 1927, experienced an east-going current of about 4 knots off Ras Nūh (*Lat. 25° 06' N., Long. 62° 23' E.*), at about one hour before high-water by the shore.

Gwādar East bay.—Dangers.—Gwādar East bay is entered ⁵ between Jabal Sur and Ras Nūh. Except on the northern side of the headland its shores are low and sandy. A flat, over which there are depths of about 2 fathoms (3^m7), extends from one to $2\frac{1}{2}$ miles from the eastern side of the isthmus. It was reported, in 1934, that erosion of the isthmus is continual and that shoaling was taking place in the ¹⁰ bay. Shoals, with depths of 3, $3\frac{1}{2}$ and $5\frac{1}{2}$ fathoms (5^m5 , 5^m9 and 9^m6) over them, lie about $1\frac{1}{2}$ miles northward, $1\frac{1}{2}$ miles north-north-eastward and $1\frac{1}{2}$ miles north-eastward, respectively, of the temple on Ras Nūh.

The bay is well sheltered from south-westerly winds, but during the South-west monsoon, the long swell rounding Ras Nūh causes ¹⁵ vessels at anchor to roll heavily. During easterly winds, communication with the shore is sometimes difficult, but these winds are seldom strong enough to endanger a vessel; during the continuance of such winds a steam vessel might obtain shelter in Gwādar West bay. *See* ²⁰ page 78.

A boat harbour is formed by a projecting cliffy point, at the southern end of the bay, on the northern side of Gwādar head about $1\frac{1}{2}$ miles westward of Ras Nūh.

There is no proper landing place either in Gwādar East bay or Gwādar West bay, the boats being hauled up on the shelving beach. ²⁵

Anchorage.—Directions.—Anchorage may be obtained in Gwādar East bay with the telegraph office at Gwādar bearing between 262° and 250° as close in as the draught of the vessel will permit; the closer the better, both to facilitate communication with the town and to obtain smoother water. ³⁰

Approaching from southward or westward, from a position about 4 miles southward of Ras Nūh, with the western end of Jabal Mehdi ridge bearing less than 348° and open eastward of Ras Nūh, a vessel should steer for the eastern peak of the ridge, bearing less than 005° , until Ras Nūh is abeam, whence she should steer for the anchorage as ³⁵ convenient, taking care to avoid the shoals northward and north-eastward of Ras Nūh, previously mentioned.

Gwādar.—This town is situated near the southern end of the sandy isthmus connecting Gwādar head to the mainland. Most of the dwellings are mat huts, but a number of mud and stone buildings, ⁴⁰ amongst which is a conspicuous mosque, are grouped round a square fort with a high tower. Northward of the town is the telegraph office, a large block of buildings, and about half a mile farther northward is the Wali's fort with its flagstaff, which must not be mistaken for the telegraph office. This fort is a large white square building, ⁴⁵ conspicuous either from eastward or westward. The flagstaff stands on the south-eastern corner of the roof and its truck is about 100 feet (30^m5) in height. About midway between the Wali's fort and the telegraph office are two wireless masts, each 70 feet (21^m3) in height, but they are not conspicuous from eastward or westward as they are ⁵⁰ partially obscured by trees. In the vicinity of the town, there are a few date palms and banyan trees.

The town and district, the coast of which latter extends from the mouth of Karawat river to the neighbourhood of Ras Pishukān (*see*

Chart 38, plan of Gwādar bay.

below), is administered by an Arab Wali representing the Sultan of Muscat.

A British Political Agent resides at Gwādar.

5 Chart 38, with plan of Gwādar bay.

Gwādar West bay.—Anchorage.—This bay is entered between Ras Kamaiti and Ras Pishūkān (Pishkān), about 10 miles westward. A spit extends about half a mile southward from Ras Kamaiti, but the north-western side of the point is fairly steep-to; a bank, with 10 depths of less than 3 fathoms (5^m5), extends nearly $2\frac{1}{2}$ miles offshore on the western side of Gwādar isthmus, which latter forms the eastern shore of the bay.

Ras Pishūkān (*Lat. 25° 06' N., Long. 62° 05' E.*) consists of narrow rocky cliffs about 20 feet (6^m1) high, and a rocky spit, on which the sea 18 breaks, extends about $3\frac{1}{2}$ cables south-eastward from it. The headland is reported to be the western limit of Gwādar territory, but the frontier has not been permanently defined.

With the exception of Toshdān kūh, near which there is a fort, a small range of low hills on the coast about 7 miles northward of Ras 20 Pishūkān, the shores of the bay are low.

Khōr Akāra (Ankara) is a small stream at the head of the bay eastward of Toshdān kūh, and in its vicinity the land is marshy.

The small village of Pishūkān is situated on the western side of the bay about 4 miles north-north-westward of Ras Pishūkān.

25 Anchorage may be obtained in Gwādar West bay, at about $2\frac{1}{2}$ miles offshore, in a depth of 4 fathoms (7^m3), sand, with Ras Kamaiti bearing 198° , and the telegraph office at Gwādar, 090° ; or, on the western side of the bay, in a depth of 4 fathoms (7^m3), with Ras Pishūkān bearing 182° , distant about 3 miles.

30 Chart 38.

Coast.—The coast for 12 miles westward of Ras Pishūkān is low, and thence for about 4 miles southward, to Ras Ganz (Gunz), it consists of a succession of rocky, cliffy points separated by sandy beaches.

Bandar Ganz entered between Ras Pishūkān and Ras Ganz, affords 35 shelter, during westerly winds, to small vessels, in depths of from 3 to 4 fathoms (5^m5 to 7^m3), about one mile offshore.

Ras Ganz is of light colour and about 200 feet (61^m0) high; it is the bluff eastern point of Katāgar promontory, and is conspicuous from westward but not so from eastward.

40 Ganz is a small village of mat huts on the coast about 4 miles northward of Ras Ganz; a small whitewashed mosque is the only permanent building.

Katāgar promontory, 464 feet (138^m4) high, separates Bandar Ganz from Gwātar bay; its southern side, of which Ras Jiwani (Jiyūni), 45 about 100 feet (30^m5) high, is its western extremity, is an almost unbroken line of cliff, interspersed at its foot with sandy beaches. Ras Garnān (*Lat. 25° 01' N., Long. 61° 45' E.*), about 2 miles eastward of Ras Jiwani, is about 20 feet (6^m1) high, and projects about half a mile southward beyond the line of the higher cliffs.

50 Remarkable hills with rugged peaks, and amongst which are pillars of clay, rise a short distance inland and extend nearly to the Dasht river (page 80); northward of these hills is the great plain or valley of the Dasht.

The bottom off Katāgar promontory is very uneven in depths of less 55 than 10 fathoms (18^m3).

Chart 748b.

Chart 38, with plan of Gwātar bay.

Gwātar bay and approaches.—Dangers.—Gwātar bay is entered between Ras Jiwani and Ras Fastā, about 15 miles west-north-westward. A spit, which appears to dry, extends about one cable westward from the western side of Ras Jiwani.

The gradual decrease of soundings towards the coast southward of Gwātar bay is a useful guide to a vessel approaching at night or in thick weather. The bottom consists of white clay, very tenacious and gritty. After heavy rain, the water in the bay and its approaches becomes discoloured, and much drift wood is seen.

A shoal patch, over which there is a depth of 6 fathoms (11^m0), was reported by H.M.S. *Sphinx*, in 1891, to lie about 3½ miles south-eastward of Ras Jiwani.

A shoal, over which there is a depth of 2½ fathoms (4^m6), rock and sand, lies about 1½ miles south-eastward of Ras Jiwani, and there are 15 depths of 7 fathoms (12^m8) between it and the coast.

A shoal, over which there is a depth of 2 fathoms (3^m7), lies about one mile westward of the western extremity of Ras Jiwani, and a shoal, with depths of from 4 to 5 fathoms (7^m3 to 9^m1), lies about 2 miles westward of the same point; for about 2½ miles northward of the point, a reef extends about half a mile offshore. There are several shoal patches northward of the 2-fathom (3^m7) shoal, and depths of less than 3 fathoms (5^m5) were reported, in 1921, within about 1½ miles of the coast northward of Ras Jiwani.

The eastern shore of the bay is cliffy for about 3½ miles northward 25 of Ras Jiwani, beyond which it is sandy with rocky hills rising at a short distance inland. At the head of the bay, which is low, are several creeks and mangrove swamps extending some miles inland. The western shore is a succession of bluff points, separated by sandy beaches, behind which the land rises to table-topped hills.

The hills near the eastern shore of the bay are of even outline; but behind them are others of fantastic shape, the highest, in the form of a remarkable pillar, being very conspicuous.

Jiwani village, consists of two groups of mat huts, situated on low rocky cliffs on the eastern shore of Gwātar bay, about 2½ miles northward of Ras Jiwani and a third group on that point. Partridge, hare, and gazelle shooting can be had.

There is good landing, even during the South-west monsoon, in a bay about 1½ miles northward of the western extremity of Ras Jiwani. At the head of this bay, and half a mile inland, is a white 40 rectangular stone fort. The coastline of this part, as charted, was reported, in 1921, to be only approximately correct.

Khōr Jiwani is the easternmost creek at the head of the bay.

Ras Fastā (*Lat. 25° 04' N., Long. 61° 25' E.*), the eastern extremity of a detached ridge extending about 6 miles westward along the coast, 45 is a cliff about 45 feet (13^m7) high.

South islet and North islet, lying about one mile eastward of Ras Fastā, are two small rocks situated close together on a reef, off which foul ground extends for about 4 cables; South islet, the higher, has an elevation of 108 feet (32^m9).

Two shoals, with depths of 4½ and 4¾ fathoms (7^m8 and 8^m2), lie about 1½ and 2½ miles, respectively, south-westward of Ras Fastā.

On the northern side of Ras Fastā is a small bay affording shelter to small craft, in depths of from 1½ to 3 fathoms (2^m7 to 5^m5), mud.

Chart 38, with plan of Gwātar bay.

Castle hill, about $3\frac{1}{2}$ miles north-westward of Ras Fastā, is square, rocky, and 430 feet ($131^{\text{m}1}$) high ; its summit, seen over the lower hills in front of it, resembles a fort. (See view on chart 38.) It does not, however, show until bearing less than about 340° .

Bahu or Dashtiārī Chil river, which flows into the bay, about $7\frac{1}{2}$ miles north-eastward of Ras Fastā, is the mouth of two combined streams ; it has a shallow bar, but is deep inside, and is tidal for some distance. The position of the entrance can be identified from a distance by the 10 masts of the dhows anchored within. The only landing for boats is within the entrance.

Gwātar village stands near the mouth of Bahū river.

There is a conspicuous white fort with two towers on the western side of the village. Between it and the river is a small round tower 15 with a tall and conspicuous flagstaff.

After rain, the water is fresh some miles up the river. There are several creeks between the mouth of Bahū river and Khōr Dasht, about 7 miles eastward.

Drabhol kūh (Darabūl), northward of the middle of the bay and 20 about 9 miles inland, is a detached table-topped hill, about 500 feet ($152^{\text{m}4}$) high, with sloping sides.

The depths in the bay, over a mud bottom, decrease regularly from about 6 fathoms ($11^{\text{m}0}$) at the entrance, but, in 1915, they were reported to be less than charted.

25 Khōr Dasht is the mouth of the Dasht river, the largest on this coast ; the river flows south-westward and finally, passes eastward of Drabhol kūh into the head of the khōr. The following is from a report in 1916. "The mouth of the khōr is about 2 cables wide, between flat sandy banks almost awash, on which the latter breaks during the 30 South-west monsoon. The bar and breakers extend about one mile southward from the coast. The passage over the bar is on the eastern side of the breakers. A depth of .4 feet ($1^{\text{m}2}$) can be obtained by keeping a grass-covered sand hill, situated near the shore on the western side of the entrance, in line with the third distant peak westward of 35 Drabhol kūh range, bearing 338° . Course should not be altered up the river until the sandy spit on the eastern bank is well clear of the eastern extremity of Drabhol kūh. For the first two miles the eastern bank should be followed. Above this the greater depths are on the concave sides of the bends in the river. About 10 or 11 miles from 40 the entrance, the depth is only 2 feet ($0^{\text{m}6}$), the tidal rise being from 2 to 3 feet ($0^{\text{m}6}$ to $0^{\text{m}9}$). The river is tidal for about 12 miles from its mouth ; in places it decreases in width to about half a cable and there, when the river is in flood, the depths are from 2 to $3\frac{1}{2}$ fathoms ($3^{\text{m}7$ to $6^{\text{m}4}$)."

45 Chart 38.

PERSIAN MAKRĀN.—General remarks.—The coast of Persian Makrān extends from the Perso-Kalāt frontier in Gwātar bay (*Lat.* $25^{\circ} 10' N.$, *Long.* $61^{\circ} 33' E.$), westward for about 210 miles to Jāsk. In places it is low, with ranges of mountains some distance inland, but 50 there are many high rocky points and hills near the coast. The country, though barren, is not absolutely desert. There are a number of villages or settlements, but no town of importance, and the population is scanty.

Chart 748b.

Chart 38.

Navigation along this coast is impeded by the land being frequently obscured by dust haze, soundings being then the only guide ; this is especially the case from April to July. Due to this haze, when only about 5 miles offshore and in depths of less than 10 fathoms ($18^{\text{m}}3$), it is often necessary to obtain the position of the vessel by astronomical observations.

Coast.—For about 6 miles west-north-westward of Ras Fastā, the coast is cliffy, thence for 2 miles there is a low gap, where the coast recedes for a short distance, and for the next 7 miles to Ras Brīs, ⁵ there are vertical white cliffs with a level summit about 200 feet ($61^{\text{m}}0$) high. From about 3 miles westward of Ras Fastā, the coast is fringed with a shoal gradually increasing in width until at Ras Brīs its outer edge lies about one mile offshore.

Ras Brīs is at the western end of the white cliffs ; north-eastward of, ¹⁵ and detached from, the latter is a range of white clay hills with very remarkable peaks ; both Ras Brīs and the range within it are conspicuous (*see* view on chart 38). Brīs, about $1\frac{1}{2}$ miles north-eastward of Ras Brīs, is a small fishing village on the shore of a bay on the northern side of the cape. ²⁰

Anchorage may be obtained, in a depth of about 5 fathoms ($9^{\text{m}}1$), sand, in the middle of this bay ; the depths shoal gradually towards the shore.

Between Brīs and Siāh (Siyā) kūh, about 18 miles west-north-westward, the coast is low and sandy. Siāh kūh, about 1,000 feet ($304^{\text{m}}8$) ²⁵ high, is a dark round hill, situated close to the coast, with cliffs on its seaward side.

From Ras Brīs to about 3 miles eastward of Siāh kūh there are depths of 5 fathoms ($9^{\text{m}}1$) about $1\frac{1}{2}$ miles offshore, but depths of 6 fathoms ($11^{\text{m}}0$) were obtained in 1911, about half a mile westward ³⁰ of Ras Brīs.

Kochu is a small settlement about 12 miles westward of Brīs and there is a large village on the coast, about $1\frac{1}{2}$ miles east-south-eastward of Siāh kūh.

Kinj Dap is a gap in the coastal hills on the western side of Siāh kūh, ³⁵ through which flows a small stream of the same name, the mouth of which is probably usually barred by sand, but after heavy rains in the interior it becomes open ; at its mouth is a grove of acacia trees and on its eastern bank, about $2\frac{1}{2}$ miles from the sea, is the village of Kinj. ⁴⁰

Between Kinj Dap and Chāhbār point (*Lat.* $25^{\circ} 17' N.$, *Long.* $60^{\circ} 36' E.$), about 13 miles west-north-westward, the coast consists of rocky hills and cliffs, gradually decreasing in elevation towards the point. Inland of these coastal hills, a vast plain extends westward for many miles. ⁴⁵

Khāki kūh, north-eastward of Siāh kūh and about 9 miles inland, rises to an elevation of about 2,000 feet ($609^{\text{m}}6$) (*see* view on chart 38). The range extends for some miles eastward and westward, and its southern face is vertical ; its crest is deeply indented, and when seen from westward presents a double peak with a bluff south-eastward of it ; being composed of white clay it is conspicuous when the sun shines on it. ⁵⁰

Between Ras Brīs and Chāhbār point, the bottom, in depths of less than 10 fathoms ($18^{\text{m}}3$), is mud.

Chart 748b.

Chart 38, with plan of Gwātar bay.

Castle hill, about $3\frac{1}{4}$ miles north-westward of Ras Fastā, is square, rocky, and 430 feet ($131^{\text{m}1}$) high ; its summit, seen over the lower hills in front of it, resembles a fort. (See view on chart 38.) It does not, however, show until bearing less than about 340° .

Bahu or Dashtiāri Chil river, which flows into the bay, about $7\frac{1}{2}$ miles north-eastward of Ras Fastā, is the mouth of two combined streams ; it has a shallow bar, but is deep inside, and is tidal for some distance. The position of the entrance can be identified from a distance by the 10 masts of the dhows anchored within. The only landing for boats is within the entrance.

Gwātar village stands near the mouth of Bahū river.

There is a conspicuous white fort with two towers on the western side of the village. Between it and the river is a small round tower 15 with a tall and conspicuous flagstaff.

After rain, the water is fresh some miles up the river. There are several creeks between the mouth of Bahū river and Khōr Dasht, about 7 miles eastward.

Drabhol kūh (Darabūl), northward of the middle of the bay and 20 about 9 miles inland, is a detached table-topped hill, about 500 feet ($152^{\text{m}4}$) high, with sloping sides.

The depths in the bay, over a mud bottom, decrease regularly from about 6 fathoms ($11^{\text{m}0}$) at the entrance, but, in 1915, they were reported to be less than charted.

25 Khōr Dasht is the mouth of the Dasht river, the largest on this coast ; the river flows south-westward and finally, passes eastward of Drabhol kūh into the head of the khōr. The following is from a report in 1916. "The mouth of the khōr is about 2 cables wide, between flat sandy banks almost awash, on which the latter breaks during the

30 South-west monsoon. The bar and breakers extend about one mile southward from the coast. The passage over the bar is on the eastern side of the breakers. A depth of 4 feet ($1^{\text{m}2}$) can be obtained by keeping a grass-covered sand hill, situated near the shore on the western side of the entrance, in line with the third distant peak westward of

35 Drabhol kūh range, bearing 338° . Course should not be altered up the river until the sandy spit on the eastern bank is well clear of the eastern extremity of Drabhol kūh. For the first two miles the eastern bank should be followed. Above this the greater depths are on the concave sides of the bends in the river. About 10 or 11 miles from

40 the entrance, the depth is only 2 feet ($0^{\text{m}6}$), the tidal rise being from 2 to 3 feet ($0^{\text{m}6}$ to $0^{\text{m}9}$). The river is tidal for about 12 miles from its mouth ; in places it decreases in width to about half a cable and there, when the river is in flood, the depths are from 2 to $3\frac{1}{2}$ fathoms ($3^{\text{m}7}$ to $6^{\text{m}4}$)."

45 Chart 38.

PERSIAN MAKRĀN.—General remarks.—The coast of Persian Makrān extends from the Perso-Kalāt frontier in Gwātar bay (*Lat.* $25^{\circ} 10' N.$, *Long.* $61^{\circ} 33' E.$), westward for about 210 miles to Jāsk. In places it is low, with ranges of mountains some distance inland, but 50 there are many high rocky points and hills near the coast. The country, though barren, is not absolutely desert. There are a number of villages or settlements, but no town of importance, and the population is scanty.

Chart 748b.

Chart 38.

Navigation along this coast is impeded by the land being frequently obscured by dust haze, soundings being then the only guide ; this is especially the case from April to July. Due to this haze, when only about 5 miles offshore and in depths of less than 10 fathoms ($18^{\text{m}}3$), it is often necessary to obtain the position of the vessel by astronomical observations.

Coast.—For about 6 miles west-north-westward of Ras Fastā, the coast is cliffy, thence for 2 miles there is a low gap, where the coast recedes for a short distance, and for the next 7 miles to Ras Brīs, ⁵ there are vertical white cliffs with a level summit about 200 feet ($61^{\text{m}}0$) high. From about 3 miles westward of Ras Fastā, the coast is fringed with a shoal gradually increasing in width until at Ras Brīs its outer edge lies about one mile offshore.

Ras Brīs is at the western end of the white cliffs ; north-eastward of, ¹⁵ and detached from, the latter is a range of white clay hills with very remarkable peaks ; both Ras Brīs and the range within it are conspicuous (*see* view on chart 38). Brīs, about $1\frac{1}{2}$ miles north-eastward of Ras Brīs, is a small fishing village on the shore of a bay on the northern side of the cape. ²⁰

Anchorage may be obtained, in a depth of about 5 fathoms ($9^{\text{m}}1$), sand, in the middle of this bay ; the depths shoal gradually towards the shore.

Between Brīs and Siāh (Siyā) kūh, about 18 miles west-north-westward, the coast is low and sandy. Siāh kūh, about 1,000 feet ($304^{\text{m}}8$) ²⁵ high, is a dark round hill, situated close to the coast, with cliffs on its seaward side.

From Ras Brīs to about 3 miles eastward of Siāh kūh there are depths of 5 fathoms ($9^{\text{m}}1$) about $1\frac{1}{2}$ miles offshore, but depths of 6 fathoms ($11^{\text{m}}0$) were obtained in 1911, about half a mile westward ³⁰ of Ras Brīs.

Kochu is a small settlement about 12 miles westward of Brīs and there is a large village on the coast, about $1\frac{1}{2}$ miles east-south-eastward of Siāh kūh.

Kinj Dap is a gap in the coastal hills on the western side of Siāh kūh, ³⁵ through which flows a small stream of the same name, the mouth of which is probably usually barred by sand, but after heavy rains in the interior it becomes open ; at its mouth is a grove of acacia trees and on its eastern bank, about $2\frac{1}{2}$ miles from the sea, is the village of Kinj. ⁴⁰

Between Kinj Dap and Chāhbār point (*Lat.* $25^{\circ} 17' N.$, *Long.* $60^{\circ} 36' E.$), about 13 miles west-north-westward, the coast consists of rocky hills and cliffs, gradually decreasing in elevation towards the point. Inland of these coastal hills, a vast plain extends westward for many miles. ⁴⁵

Khāki kūh, north-eastward of Siāh kūh and about 9 miles inland, rises to an elevation of about 2,000 feet ($609^{\text{m}}6$) (*see* view on chart 38). The range extends for some miles eastward and westward, and its southern face is vertical ; its crest is deeply indented, and when seen from westward presents a double peak with a bluff south-eastward of it ; being composed of white clay it is conspicuous when the sun shines on it. ⁵⁰

Between Ras Brīs and Chāhbār point, the bottom, in depths of less than 10 fathoms ($18^{\text{m}}3$), is mud.

Chart 748b.

Chart 38, with plan of Chāhbār bay.

Chāhbār bay.—Light.—Dangers.—This bay is entered between Chāhbār point and Ras Kūhlab, situated about $7\frac{1}{2}$ miles westward.

Chāhbār point is low and rocky and on it are some small sand hills ; near its extremity is a small square tomb with a white dome, about one mile east-north-eastward of which are two dark coloured flat-topped buildings, one of which is the telegraph office, which assist in identifying the point ; this building is visible from south-eastward. A reef extends about 3 cables westward from the point, and for a distance of about one cable farther the bottom is foul.

The north-western side of the point is bordered by a reef, and foul ground extends about $2\frac{1}{2}$ cables offshore, as far north-eastward as a small clump of date trees near the ruins of a fort ; northward of these trees the beach is sandy.

15 An obstruction was reported, in 1937, to lie three-quarters of a mile west-north-westward of Chāhbār point. A shoal, with a depth of $2\frac{1}{2}$ fathoms (5^m0), lies about 9 cables northward of the point and the same distance offshore.

Tiz point lies about $3\frac{1}{2}$ miles northward of Chāhbār point and the intervening coast forms a small bay, at the head of which is Chāhbār town.

A rocky bank, over which the depths are from $1\frac{1}{2}$ to 2 fathoms (2^m7 to 3^m7), extends 3 miles north-westward from Tiz point.

20 A light is exhibited, at an elevation of 36 feet (11^m0), from the roof of the telegraph office.

Ras Kūhlab is the extremity of a promontory, the sides of which consist of low cliffs. Within Chāhbār bay, and on the northern side of this promontory, is a cliffy point, 270 feet (82^m3) high, situated about $2\frac{1}{2}$ miles north-westward of Ras Kūhlab.

30 For the first 4 miles within the entrance points, the shores of the bay, on either side, are rocky ; at the head of the bay is a large plain, the shores of which are low and swampy.

For a distance of about $2\frac{1}{2}$ miles south-eastward of Tiz point, the shore of Chāhbār bay consists of cliffs about 150 feet (45^m7) high, rising steeply to a tableland about 400 feet (121^m9) high, the southern side of which is composed of cliffy terraces, and the south-eastern side, at about 4 miles eastward of Tiz point, is in places almost precipitous (see view facing page 93). North-eastward of Tiz point, the cliffs turn inland forming the southern side of the large plain inland of Chāhbār bay. Immediately northward of Tiz point is the mouth of a valley, in which, about one mile inland, is the village of Tiz. At the entrance of this valley is a small hill on which is a fort, and, fronting it, a shallow lagoon which fishing craft can enter at high water.

Narmak rūd flows out about 6 miles northward of Tiz point.

45 Kunārak village (*Lat. $25^{\circ} 21' N.$, Long. $60^{\circ} 24' E.$*) is situated on the western shore of Chāhbār bay about $5\frac{1}{2}$ miles north-westward of Ras Kūhlab ; there was a conspicuous tree, in 1911, close southward of the village.

A range of mountains, on the northern side of the plain at the head 50 of Chāhbār bay, runs parallel with the coast about 8 miles inland ; one of its summits, Kūh-i-Guransan (Quoin), is conspicuous and about 2,400 feet (731^m5) high ; about 10 miles westward of it, is a sharp peak which may be identified from south-westward.

Anchorage.—Directions.—Anchorage may be obtained by small

Chart 38, with plan of Chahbār bay.

vessels in Chāhbār bay, in a depth of about 4 fathoms ($7^{\text{m}}3$), sand, with the tomb on Chāhbār point bearing 170° , and the mosque (see below) in Chāhbār bearing 110° ; native craft anchor, in depths of about 2 fathoms ($3^{\text{m}}7$), about half a mile off the town. 5

During the South-west monsoon, when a heavy south-south-easterly swell is rolling into the bay, sheltered anchorage with no swell may be obtained about $3\frac{1}{4}$ miles eastward of Kunārak village; this anchorage also affords shelter during a shamāl.

Anchorage in Chāhbār bay is prohibited southward of a line drawn 10° from the mosque in the town.

The best landing place is directly under the barracks in Chāhbār, where a good lee is given by a flat rock. During the South-west monsoon, landing is difficult owing to the heavy swell.

The two entrance points of the bay, being light in colour, are not 15° easily distinguished at night, and should be approached with caution, vessels being guided by the light on the telegraph office.

The tidal streams in the bay are scarcely perceptible.

Chāhbār town.—This town is situated on the eastern side of Chāhbār bay about $1\frac{1}{4}$ miles north-eastward of Chāhbār point. A large 20° white mosque, with a white dome, stands about half a mile northward of the light structure and is conspicuous from seaward.

Barracks, consisting of three large one-storied buildings, are situated near the telegraph station.

Sheep and bullocks may be procured from the neighbouring country. 25° Ibex may be shot on Ras Kūhlab.

A Persian doctor is Quarantine officer at Chāhbār.

Chāhbār is connected to the general telegraph system.

For communication by air, see page 17.

Climate.—Health.—During the South-west monsoon in the Indian 30° ocean, south-south-easterly winds of some strength are common by day, but fall light at night. These winds cause a heavy sea to break all round the shores of the bay, except at the town, which is sheltered. The shamāl is fairly frequent in winter. The prevalence of south-south-easterly winds renders Chāhbār much more suitable to Europeans than 35° almost any other place in, or near, the entrance of the Persian gulf.
Chart 38.

Coast.—Anchorage.—Dangers.—A short distance westward of Ras Kūhlab the coast becomes higher and may be safely approached to a distance of about one mile. Ras Puzim (Pazim), about 11 miles 40° west-north-westward of Ras Kūhlab, is faced with cliffs, about 300 feet ($91^{\text{m}}4$) high; there are depths of 3 fathoms ($5^{\text{m}}5$) within about one mile of the point, outside which the depths increase to 6 and 8 fathoms ($11^{\text{m}}0$ and $14^{\text{m}}6$). Puzim bay is entered between Ras Puzim and Ras Rashidi, about 5 miles westward. 45

Ras Rashidi (*Lat. $25^{\circ} 19' N.$, Long. $60^{\circ} 11' E.$*) is the eastern extremity of a table-topped promontory, about 150 feet ($45^{\text{m}}7$) high, the southern side of which trends westward for about $5\frac{1}{2}$ miles, and ends in a somewhat higher vertical cliff; this promontory is almost inaccessible on all sides, and the land on its northern side is low and sandy; 50° there are depths of 4 fathoms ($7^{\text{m}}3$) about half a mile off its southern side.

Puzim bay was reported in 1910 to extend farther northward than charted; the shore within its entrance points is low and sandy;

Chart 38.

within it the depths were reported to be greater than charted. Puzim is a small fishing village, on the eastern side of the bay, close northward of Ras Puzim. There are a few huts, on the western side of the bay, 5 northward of Ras Rashidi.

Anchorage may be obtained off Puzim village, in a depth of about 4 fathoms (7^m3), or on the western side of the bay.

Sirgān river flows into a large creek on the north-eastern side of Puzim bay. Kair river flows into a salt-water creek about $1\frac{1}{2}$ miles 10 northward of Ras Rashidi.

The great plain inland of Chāhbār bay continues westward past Puzim bay, the mountains being about 12 miles inland; but in front of the latter are some lower hills, one of which, Milin kūh, rises about 6 miles from the head of the latter bay, and is conical.

15 Baklang rock, which dries and is steep-to, lies $2\frac{1}{2}$ miles south-eastward of Ras Rashidi; when covered there is nothing to indicate it in calm weather. At night, a vessel should not approach within depths of less than 20 fathoms (36^m6).

Ras Tānk, a rocky promontory, on which are some sand hills about 20 30 feet (9^m1) high, lies about $10\frac{1}{2}$ miles westward of the western extremity of Rashidi promontory; it extends about one mile from the coast, to which it is joined by a narrow sandy isthmus. There is a bay between these two points, the shore of which is bordered by low sand hills. A small group of brown hills, westward of which are some date palms and a few large trees, is situated about 4 miles north-eastward of Ras Tānk, and is a good mark.

There are depths of 7 fathoms (12^m8) about half a mile southward of Ras Tānk; but a shoal, over which there is a depth of 4 fathoms (7^m3), extends about one mile eastward from the promontory; the small bay 30 on the western side of the promontory is shallow, and a shoal extends about 2 miles westward from the western end of the latter.

As soundings give little warning, Ras Tānk should not be approached at night into a depth of less than 30 fathoms (54^m9).

Anchorage was obtained by H.M.S. *Bramble*, in March, 1919, in 35 a depth of 20 feet (6^m1), with the eastern end of Ras Tānk bearing 197° , distant about 5 cables, but the bottom was rocky and the holding ground bad.

Tānk village (*Lat. $25^\circ 22' N.$, Long. $59^\circ 53' E.$*) is situated about 40 3 miles up a large creek which forms the mouth of a branch of Kair river, which latter flows from north-eastward at a short distance inland of the coastal sand hills until nearing its mouth; the creek is entered between the coast and a drying sand spit, which, when covered, is marked by breakers and lies close eastward of the root of Ras Tānk isthmus. The bar is shallow, but is sheltered by Ras Tānk; within 45 the bar the creek is deep and about $2\frac{1}{2}$ cables wide. Small dhows, with a draught of about 5 feet (1^m5), have been observed to anchor close off the entrance until high water, and then to proceed about three-quarters of a mile up the creek. In the creek, the rate of the out-going stream has been estimated to be from 2 to 3 knots.

50 For about 3 miles north-westward of Ras Tānk the coast is cliffy, thence for about 14 miles to Ras Maki it is low, but the point itself is about 100 feet (30^m5) high.

Hūmdān (Hamadan) village is situated in a grove, on the banks of a creek about $3\frac{1}{2}$ miles eastward of Ras Maki.

Chart 748b.

Chart 38.

Discoloured water was observed in 1919 off the coast between Ras Tānk and Ras Jāgin (page 87), nearly 100 miles westward; it is apparently caused by the water brought down by the rivers, which is carried along the coast by the tidal streams; the edge of the discoloration is no guide to the depth, as its distance from the coast is continually varying.

Kuh Kalāt is a great range of white clay cliffs of remarkable outline; its eastern extremity is situated about 11 miles northward of Ras Tānk, whence it extends westward for about 20 miles. A vertical cliff, about 650 feet (198^m1) high, rises about 4 miles from its eastern end and is conspicuous from south-eastward.

Biri Sai Padag, a sharp double peak, 1,680 feet (512^m1) high, is situated about 8½ miles north-north-eastward of Ras Maki. A remarkable mountain with a single peak rises about 3½ miles south-westward of Biri Sai Padag to an elevation of 1,350 feet (411^m5). From a distance of about 33 miles south-westward, these summits appear as a group of three conical peaks and form a good landmark. It was reported in 1911 that the single peak forms a part of Kuh Kalāt and that Biri Sai Padag is detached from that range.

The mountain range inland of the great plain at the head of Chāhbār bay becomes lower as it extends westward, and northward of Ras Tānk becomes less conspicuous.

Between Ras Maki and Ras Maidāni, 27 miles westward, the coast is low and sandy, and intersected by creeks; there are depths of less than 3 fathoms (5^m5) within 1½ miles of the coast.

Khōr Darak (Doruk) is entered about 6 miles north-westward of Ras Maki; anchorage may be obtained about half a mile off its entrance, in a depth of 2½ fathoms (4^m6). About 6 miles farther westward is the entrance to Khōr Gālag, the mouth of Khōr Rābch (page 86), which flows from the interior for a distance of about 100 miles.

The coast in the vicinity is bare and the entrance points of the creek are only about one foot (0^m3) high; but there are some tall palms, close eastward of its mouth, which are conspicuous and are a good guide. About one mile upstream, and on the eastern side of the creek, there is a small village (*Lat.* 25° 29' *N.*, *Long.* 59° 22' *E.*), the natives of which, in 1911, were friendly; it is situated near some palm trees, but the tops only of the latter were visible from westward, their trunks being obscured by sand hills, though from southward they were visible from seaward.

The bar, on which there is always a surf, extends about 1½ miles off the entrance of the creek, and the channel across it, in which there was, in 1913, a depth of about 1½ fathoms (2^m3), trends in a north-westerly direction. The river nearly dries, but off the western entrance point there is a depth of about 3 feet (0^m9). Dhows occasionally enter the creek at half tide.

Anchorage may be obtained, in a depth of 5 fathoms (9^m1), with the entrance of the creek bearing 170°, distant about 2½ miles, but within that distance the depths appear to shoal rapidly to 2 fathoms (3^m7).

In 1911, the best approach to the river was from eastward until its mouth was well open and then to steer directly towards the western entrance point, keeping close to the breakers on the western side; but the condition of the entrance may be subject to change.

The best landing, with westerly winds, is on the western entrance point of the creek.

Chart 748b.

Chart 145, plan of Hor Rabij.

Khōr Rābch.—**Anchorage.**—**Directions.**—Khōr Rābch (Rapch), entered about 8 miles westward of Khōr Gālag, is the mouth of a large tidal backwater encumbered with flats of mud and sand. About 5 $1\frac{1}{2}$ miles outside the entrance, there is a bar, over which the depths in 1911, were from $1\frac{1}{2}$ to 6 feet (0^m4 to 1^m8) and on which the sea breaks at low water. There are depths of from $1\frac{1}{2}$ to $6\frac{1}{2}$ fathoms (2^m7 to 11^m9) in the channel within the bar.

On the entrance points are some low sand hills, and the country in 10 the vicinity is desert; the inlet appears to be of no importance and is frequented only by fishing boats. Inland of Khōr Rābch there are several villages and groves of date palms.

Anchorage may be obtained, in depths of from $4\frac{1}{2}$ to $4\frac{3}{4}$ fathoms (8^m2 to 8^m7), sand, about $2\frac{1}{2}$ miles southward of the entrance of the 15 khōr.

The following directions were used in 1911, but may not now hold good. To enter the khōr, the bar should be approached, as close as possible, with the eastern edge of Korat el Usif, 80 feet (24^m4) high, seen over the eastern entrance point, bearing 349° ; thence 20 course 334° will lead across the bar, a good lookout being kept for breakers on the eastern side. When inside the bar, course should be altered to pass about one cable westward of a fuzzy bush, on the eastern entrance point, after passing which the channel follows the western shore of the inlet until abreast a low sandy spit extending 25 westward from the eastern shore. Landing can be effected, near the fuzzy bush, on the low sandy spit.

Charts 38, 2837a.

Coast.—Shoal.—Ras Maidāni is faced with white cliffs, 155 feet (47^m2) high, which extend westward for about 3 miles, whence, for a 30 farther 2 miles, the coast is low and sandy and covered with small bushes. The hills, which terminate in the cliffs, are about 200 feet (61^m0) high, table-topped, and brown in colour. (See view on chart 38). Westward of the cliffs, and at a short distance inland, is a large date grove.

35 From northward of the hills near Ras Maidāni (*Lat. $25^{\circ} 24' N.$, Long. $59^{\circ} 06' E.$*), the great coastal plain continues westward for about 60 miles.

The coastal bank, with depths of less than 3 fathoms, extends about 1 $\frac{1}{2}$ miles southward from Ras Maidāni, and fringes the coast for about 40 10 miles north-westward, and attains its greatest width about 5 miles from the point where its outer edge lies about 3 miles offshore.

Caution is necessary when approaching Ras Maidāni, especially at night, for the soundings give very little warning.

A small bay, protected by a rocky point, affords a good landing 45 about 17 miles north-westward of Ras Maidāni. From a position about one mile eastward of the rocky point, to Sādaich point, about 9 miles westward, and beyond, the coastal bank extends about 2 miles offshore.

Sādaich river flows through swampy ground into a tidal creek at 50 Sādaich point, and is fronted by a shallow bar; the course of the river beyond the mountains has not been examined. Boats cannot enter the river at low water, and within it is shallow; it is probable that the entrance is subject to change. On the banks of the river, at some distance inland, are a village and some date groves. Darhaman kūh

Chart 748b.

Chart 38, 2837a.

(Quoin), on the western side of which is an extensive valley, rises to an elevation of 2,120 feet (646^m2), about 18 miles north-eastward of Sādaich point.

Aspect.—Bashāgird, an inland district of Persian Makrān, northward of Jāsk and westward of the Sādaich river, is very mountainous and very little is known of it.

Gukardi kūh, from 2 to 4 miles inland, about 6 miles eastward of Sādaich river, has three principal conical peaks, the northern and highest being 490 feet (149^m3) high. There is a rocky outcrop, from 10 to 50 feet (6^m1 to 15^m2) high, on the plain about 5 miles eastward of Gukardi kūh.

Gūh kūh (Jabal Shahu), about 36 miles north-north-westward of Sādaich point, rises to an elevation of 6,220 feet (1895^m9); it appears to be almost detached from the neighbouring mountains in Bashāgird, 15 and from south-eastward its eastern side shows a great bluff, though from westward its summit appears rounded. See view on chart 38.

The coastal range extends westward from the vicinity of Darhaman kūh towards Jāsk, about 50 miles westward of Sādaich point, the elevation of its peaks varying from 1,400 to 2,540 feet (426^m7 to 20 774^m2).

A range of bare white sand hills, about 100 feet (30^m5) high, extends about 6 miles westward along the coast from Sādaich point; there is a conspicuous tree at the western end of these sand hills.

Coast.—Anchorage.—Ras Jagīn lies about 31 miles westward of 25 Sādaich point; the coast between the sand hills and the point is very low, and is intersected by mangrove swamps and the mouths of numerous creeks; that immediately westward of the sand hills affords shelter to boats, having, in 1910, depths of 2 feet (0^m6) on the bar and from 6 to 8 feet (1^m8 to 2^m4) a short distance within, between 30 steep-to banks about 6 feet (1^m8) high. Local craft enter other creeks, which are the mouths of streams descending, through gaps in the coastal mountains, from the Bashāgird mountains. One of the largest of these streams is Gabrig river, which flows out about 18 miles westward of Sādaich point (*Lat. 25° 33' N., Long. 58° 40' E.*). 35

The bank eastward of Sādaich point continues to fringe the coast between the mouth of that river and that of Gabrig river and extends about 2 miles offshore. An isolated sand hill, covered with scrub, rises about 1½ miles westward of the mouth of Gabrig river. The boat channel into the Gabrig river lies at the eastern end of the bar at its 40 mouth, and has a depth in it of about one foot (0^m3).

Anchorage may be obtained off the mouth of the river, in a depth of 5 fathoms (9^m1), about 2 miles offshore, but the depths decrease rapidly to 2 fathoms (3^m7) towards the coast.

A north-easterly current was experienced in 1911, between the 45 mouth of Gabrig river and Ras Jagīn.

Ras Jagīn is very low and sandy, and the Jagīn river flows out close eastward of it; inland of the point is a mangrove swamp, whence a plain extends to the foot of the hills. A sandy spit, which dries, extends about half a mile south-westward from the point, there being 50 depths of 3 fathoms (5^m5) about one mile offshore; it is probable that the configuration of this point alters after heavy rains or storms; as there are depths of from 18 to 20 fathoms (32^m9 to 36^m6) within one mile of the spit, soundings afford little guide and caution is necessary

Chart 748b.

Charts 38, 2837a.

when in its vicinity, particularly as the point itself is difficult to identify and the appearance of the hills inland cause the distance offshore to be easily over-estimated.

6 Jäsk East bay.—Jäsk East bay is entered between Ras Jagin and Ras Jäsk, about 20 miles west-north-westward. The north-eastern shore of the bay is low and is fringed by a sand bank, which dries out for a distance of about half a mile. There is an entrance to a stream about 8 miles north-westward of Ras Jagin. At the head **10** of the bay, the hills approach within one mile of the shore, the coastal range ending in Küh-i-Loh (Gazdān kūh), a ridge of white cliffs, 1,720 feet (524^m3) high, which, from westward, appears wedge-shaped. There is a village with a few date palms between Küh-i-Loh and the shore. The north-western shore of the bay is rocky and level, about **15** 14 feet (4^m3) high, with a sandy beach and, in places, rocky ledges and low cliffs.

Anchorage.—Caution.—Anchorage, somewhat sheltered from westerly winds, may be obtained, in depths of from 6 to 8 fathoms (11^m0 to 14^m6), close off the north-western shore of the bay. The **20** bay is open south-eastward and there is usually a light surf on the beach which becomes heavy during the South-west monsoon, although there may be only a slight ground swell in the bay. The bay is open to north-easterly and easterly winds in winter. During a shamāl, the wind is westerly and it is reported that the anchorage is then good, **25** though a considerable swell rolls round the cape, causing a vessel at anchor to ride uneasily. For warning of a shamāl, see page 89.

Charts 145, 38, 2837a.

Vessels should not anchor with the beacon on Ras Jäsk (see below), bearing less than 046° or more than 270°, on account of the existence **30** of telegraph cables.

The best landing place is on a sandy beach between the beacon and the cliffs north-eastward of it.

Chart 145.

JÄSK BAY.—Light.—Beacon.—This bay is entered westward **35** of Ras Jäsk; its shore is composed of sand hills, from 10 to 20 feet (3^m0 to 6^m1) high.

Ras Jäsk is low and is the extremity of a point which extends a considerable distance from the general line of the coast. At its extremity there is a small tomb, 15 feet (4^m6) high, close to which are two dark **40** flat-topped buildings.

A light is exhibited, at an elevation of 37 feet (11^m3), from a white round tower on the northern corner of a small square stone house, 23 feet (7^m0) in height, about 2 cables northward of Ras Jäsk (*Lat.* 25° 38' N., *Long.* 57° 45' E.).

45 A stone beacon, painted in black and white bands and 30 feet (9^m1) in height, stands on the shore of Jäsk East bay, about 4½ cables east-north-eastward of Ras Jäsk.

The telegraph buildings, about 4 cables north-eastward of the cape, consist of three flat-roofed blocks, the northern and southern blocks **50** having conspicuous square towers; near them are some water tanks.

Jäsk village, in which there is a stone fort, extends about one mile north-eastward, along the shore of the bay, from a position about half a mile north-north-eastward of the cape.

Chart 748b.

Chart 145.

A water tank, on pillars, and roofed in, about one mile north-eastward of the telegraph buildings, is conspicuous.

Jāsk creek, about $3\frac{1}{2}$ miles north-north-eastward of Ras Jāsk, is entered by a channel through the sands, with a depth of about $1\frac{1}{2}$ feet (0^m4), with greater depths inside ; the creek winds through mangrove swamps for about 4 miles and is used by native craft ; the sands, which dry, extend nearly one mile off the mouth of the creek.

Jāsk fort is situated about $2\frac{1}{2}$ miles northward of the mouth of the creek and about one mile inland ; it is in a ruinous condition with 10 a few houses and date trees near it, and a range of white sand hills south-eastward of it ; it is not easily identified from seaward.

Dangers.—**Buey.**—Mason shoal, about 3 miles west-south-westward of Ras Jāsk, has a least depth of $2\frac{1}{2}$ fathoms (5^m0), coarse sand and shells.

A flat, over which there are depths of from $2\frac{1}{2}$ to 3 fathoms (4^m6 to 5^m5), extends about 2 miles north-westward from Ras Jāsk.

A red can buoy surmounted by a cage lies near the north-western extremity of the flat.

The western extremity of Kūh Gaigan (page 102), bearing 354°, 20 led, in 1936, between Mason shoal and the flat.

Anchorage.—**Directions.**—Convenient anchorage, partially sheltered from southerly winds by the flat extending from Ras Jāsk and by Mason shoal, but open to the shamāl, may be obtained by vessels with a draught up to 16 feet (4^m9), in a depth of $3\frac{1}{2}$ fathoms 25 (6^m4), with the lighthouse on Ras Jāsk bearing 173°, distant about 12 cables.

Larger vessels anchor farther out, in a depth of $4\frac{1}{2}$ fathoms (8^m2), with the lighthouse bearing 153°, distant about 2 miles.

Approaching from southward or eastward, a vessel may pass between 30 Mason shoal and the flat extending from Ras Jāsk (*Lat.* 25° 38' N., *Long.* 57° 45' E.) ; after rounding the buoy at the north-western end of the flat, course may be shaped as requisite for the anchorage ; the least depth on this route is $3\frac{1}{4}$ fathoms (6^m9).

Good landing may be obtained at high water within a rocky point 35 about a quarter of a mile northward of the telegraph buildings.

Warning of the approach of a shamāl may often be obtained at the telegraph office where information is received of the commencement of one at Bushire.

Meteorological table.—See page 41.

40

Supplies.—Communications.—Fresh meat and bread can be obtained, but no vegetables ; fish is plentiful.

Jāsk is connected to the general telegraph system.

For communication by air, see page 17.

W/T. station.—There is a W/T. station at Jāsk, see page 17. 45
Chart 753.

Tidal streams.—Between Ras Jāsk and Ras al Kūh, about 26 miles west-north-westward, the tidal streams off the coast set eastward and westward ; near the cape, the streams are weak, but the rate increases towards Ras al Kūh. In December, 1922, H.M.S. 50 *Espiegle* experienced a strong set in the channel between Ras Jāsk and Mason shoal, though outside the channel the stream did not appear to be strong.

Charts 38, 2837a, 748b.

CHAPTER IV

**ENTRANCE TO THE PERSIAN GULF.—RUŪS AL JIBĀL, FROM DIBBA TO,
RAS ASH SHA'M, AND THE COAST OF PERSIA, FROM JĀSK' TO CHĀRAK,
INCLUDING BANDAR 'ABBĀS AND QISHM ISLAND.**

Chart 753.

RUŪS AL JIBĀL.—Aspect.—This great and mountainous promontory, the northern end of which is the Masandam (Musandam) peninsula, is situated on the western side of the entrance of the Persian gulf. Its coast is everywhere precipitous, the cliffs in most places overhanging, their bases having been eroded by the sea. There are many small sandy bays at the mouths of the valleys, and the mountains rise abruptly from the coast. The promontory is indented, on its eastern and northern sides, by numerous inlets, in which there are considerable depths. Except in a few small valleys where date groves, &c., are to be found, the land is barren, though in some of the fissures of the hills there is a scanty vegetation. The mountains, apparently consisting of bare rock, present a wild appearance, and are infested by wolves, leopards, hyænas and foxes.

15 The inhabitants of the promontory are herdsmen and fisherfolk ; they are very superstitious.

From eastward the mountain ranges of Ruūs al Jibāl appear to have two principal peaks. Jabal Qa'wa (Kawa) (*Lat.* $25^{\circ} 45'$ *N.*, *Long.* $56^{\circ} 13'$ *E.*), the southern peak, has a small notch in its summit, 20 and rises to an elevation of about 5,800 feet (1767 m 8), about 6 miles north-north-westward of Al Karsha (page 66).

Jabal al Harim, the northern peak, lies about 14 miles northward of Jabal Qa'wa ; it is about 6,750 feet (2057 m 4) high, and has a truncated or small table top with a small notch in its southern part. See 25 views on chart 2837a.

Weather.—For weather in the Gulf of 'Omān, *see* page 30.

Coast.—Ras Haffa, about $3\frac{1}{2}$ miles north-north-eastward of Ras Suwat (page 66), is the southern extremity of a narrow promontory on the eastern side of Dōha Haffa ; the promontory is of moderate 30 height and decreases in elevation towards the point.

Dōha Haffa, entered westward of Ras Haffa, is a narrow inlet with depths of from 7 to 8 fathoms (12 m 8 to 14 m 6), and 4 fathoms (7 m 3) close inshore. The cove, which lies between high land sloping down to the water's edge, is landlocked and not noticeable from seaward.

35 A short distance within its entrance on its western side, there is a

Charts 2837a, 748b.

Chart 753.

small bay with a sandy beach at its head where there is a date garden and a few huts. At the head of the cove, there are two small villages, one on either side. H.M.S. *Triad* reported, in 1930, that the cove appeared to be shorter than charted, and that there were few places within it where landing is possible. This was confirmed by H.M.S. *Fowey*, in 1934, when she anchored near the head of the cove. 5

Khōr Mala is entered about $3\frac{1}{2}$ miles north-north-eastward of Ras Haffa, the coast between being bordered by cliffs, from 2 to 3 cables off which there are depths of 20 fathoms (36^m6). The shores of this 10 cove are indented, and the depths decrease from 8 fathoms (14^m6) in the entrance towards the head. About $3\frac{1}{2}$ miles farther northward there is another cove, in the entrance to which there is a depth of 8 fathoms (14^m6), decreasing to 3 fathoms (5^m5) in its inner part, where it is about half a mile wide; about half-way in, the cove narrows 15 to a width of about 2 cables.

Dōhat Shārja, the southern entrance point of which is about $7\frac{1}{2}$ miles northward of Ras Haffa, is separated from the last-mentioned cove by a promontory about three-quarters of a mile wide; it is open eastward and there are depths of 20 fathoms (36^m6) in the entrance, 20 decreasing gradually to the sandy beach at head of the cove.

Between the northern entrance point of Dōhat Shārja and Ras Hamra, about 3 miles north-north-eastward, the coast is precipitous. Lima peak, about $1\frac{1}{2}$ miles south-westward of Ras Hamra, appears as a fine cone from northward; about 3 miles west-south-westward 25 of it is a somewhat higher saddle-shaped mountain that is also conspicuous from northward (*see* view on chart 2837a); from eastward these mountains do not show up against the higher land farther inland.

Ghubbat 'Aqaba is entered between Ras Hamra (*Lat.* $25^{\circ} 54' N.$, 30 *Long.* $56^{\circ} 26' E.$) and Ras Samut, about $2\frac{1}{2}$ miles north-eastward. In the north-western corner of this bay is 'Aqaba, a small village, close off which boats may obtain shelter from the nashi, the worst wind on this coast.

Ras Lima, about $1\frac{1}{2}$ miles north-eastward of Ras Samut, is the 35 termination of a narrow, precipitous promontory.

Jazirat Lima, about $3\frac{1}{2}$ cables eastward of Ras Lima, is a precipitous islet, 285 feet (86^m9) high. There is a depth of 20 fathoms (36^m6) in the channel between the islet and the point, and a small detached rock lies close to the former. The tidal streams through 40 the channel are strong. Close eastward of the islet there is a depth of 30 fathoms (54^m9).

Lima.—Anchorage.—About $1\frac{1}{2}$ miles westward of Ras Lima is a sandy bay, on the southern shore of which, at the mouth of a valley, stands the village of Lima, part of which extends up the 45 side of the hill on terraces; in the valley there is a date grove and some cultivation. A spit extends about 2 cables offshore near the date grove north-westward of the village. The mountains in the vicinity of Lima rise abruptly to great heights. At the northern end of the sandy bay is a high precipitous hill, close off which lie 50 four rocky islets from 10 to 30 feet (3^m0 to 9^m1) high.

When visited by H.M.S. *Cyclamen*, in 1922, and by H.M.S. *Fowey*, in 1934, the inhabitants were perfectly friendly.

Anchorage may be obtained off Lima, in a depth of about 12 fathoms

Chart 753.

(21^m9), but it is open eastward and north-eastward. A small bight on the southern side of the bay, close to the cliffs, which is used by native boats, affords the best landing place in easterly winds.

5 **Coast.**—Ras Marovi is the northern entrance point of a bay situated 3 miles north-north-westward of Ras Lima, in which there is a patch of sandy beach. Two rocky islets, about 25 feet (7^m6) high, lie about a quarter of a mile off Ras Marovi, and a rock, of the same height, lies about one mile north-north-eastward of the same point and 10 nearly half a mile offshore, with a deep channel between the rock and the coast. About 2½ miles northward of Ras Marovi is Ras as Samid, a high cliffy point, with several small bays between them.

Dōha Qabal (Duhat Kabal) is entered between Ras as Samid and a point about 1½ miles northward; the shores are indented by several 15 bays with small beaches, separated by cliffy points. At the head of the inlet is a narrow cove with a sandy beach. About a mile south-westward of the head, the mountains rise vertically, and form a tremendous bluff, over 4,000 feet (1219^m2) high. In 1902, H.M.S. *Redbreast* anchored in a depth of 7 fathoms (12^m8) about 1½ cables 20 from the head of the cove and found that within 5 fathoms (9^m1) the depths shoaled steeply to the beach.

The cove teems with fish. In the western branch of this valley or water-course are the ruins of an extensive village, and there are some huts at the head of the cove.

25 There is a small bare hill on the summit of the lofty cliffs at the northern entrance point of the inlet, and thence the deeply furrowed cliffs trend north-eastward in an unbroken line of irregular but decreasing height. Ras Sarkan (*Lat. 26° 05' N., Long. 56° 29' E.*), a vertical cliff of considerable height, is situated about 3 miles north-eastward of the small bare hill.

Ghubbat al Ghazīra.—**Anchorage.**—This extensive inlet, also known as Malcolm inlet, is entered between Ras Sarkan and Ras Dilla, a vertical cliff, from 200 to 300 feet (61^m0 to 91^m4) high, with a conical summit, about 2½ miles northward; its shores are deeply 35 indented, high, and precipitous, except where valleys terminate in a few small sandy bays. (*See* view on chart 2837a). In the inlet on the southern side of Ghubbat al Ghazīra, entered 4½ miles westward of Ras Sarkan, there is a village, and on the shore of the small bight entered about 8 miles west-north-westward of the same point, is 40 Habalain village. Fish are plentiful and can be caught in the seine. In the entrance to Ghubbat al Ghazīra the bottom is rocky, but within it is mostly mud.

On the northern side of Ghubbat al Ghazīra are two large inlets separated by a high, narrow, and rugged peninsula. Maqāga 45 village is situated on the shore of the western of these inlets, the northern side of which is the narrow ridge or isthmus connecting the middle of the north-eastern coast of Ruūs al Jibāl to Masandam peninsula; in places the isthmus is only about 3 cables wide and on its northern side is Khōr ash Shamm, entered from the Persian 50 gulf, *see* page 99.

Film is a village at the head of the outer or eastern inlet on the northern side of Ghubbat al Ghazīra.

Good anchorage may be obtained over a sandy bottom in the bight of Habalain village.

Chart 748b.

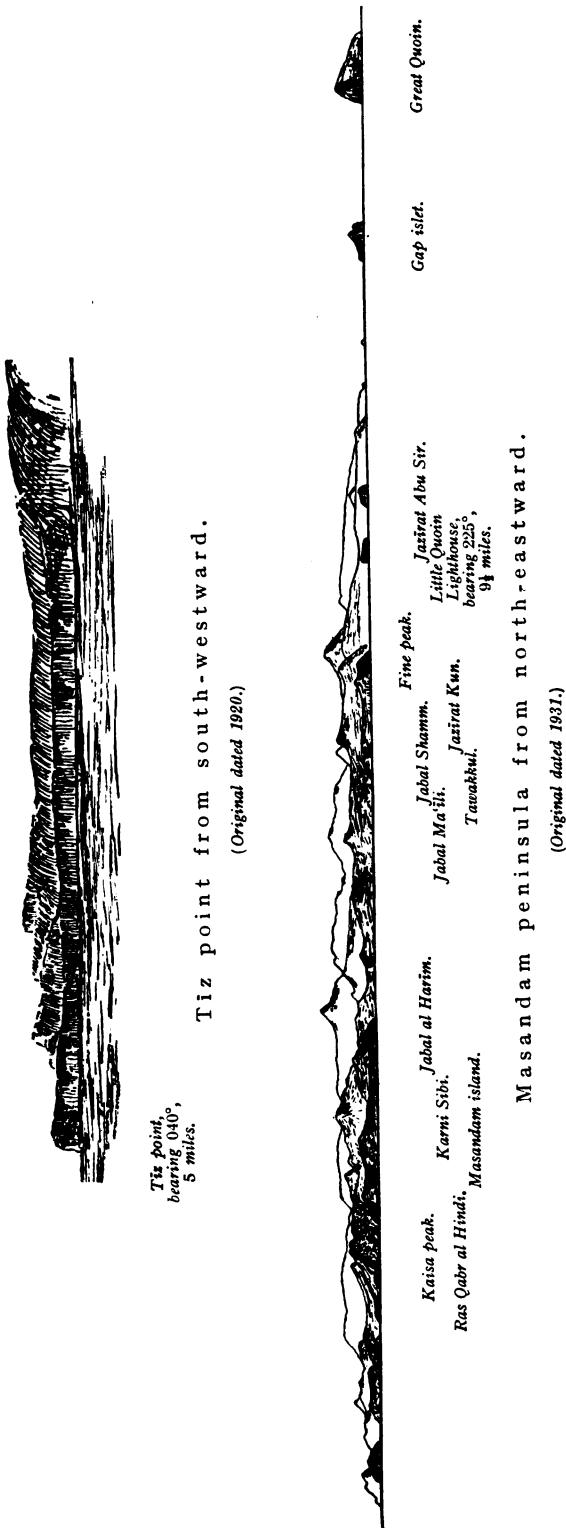


Chart 753.

In 1936, H.M.S. *Deptford* anchored, in a depth of 25 fathoms (45^m7), in the western inlet on the northern side of Ghubbat al Ghazira, with Karni Dābshun, situated about 6 miles north-north-westward of Ras Dilla, bearing 073°, and Maqāga village, 298°.

5

MASANDAM PENINSULA.—Eastern side.—Masandam (Musandam) peninsula consists of a series of small, lofty peninsulas and headlands, enclosing numerous inlets. Many of them are good harbours, though the depths in them are as a rule inconveniently great, but owing to the intense heat in summer, rendering the climate 10 unsuitable for Europeans, they can hardly be used then even as temporary anchorages. Two of its peaks rise to an elevation of about 3,000 feet (914^m4), and many others to between 1,000 and 2,000 feet (304^m8 and 609^m6). See view facing this page and views on chart 2837a.

15

The peninsula, of which Ras Dilla is the extremity, commences at Film village and has on its widest part a remarkable peak, brown in colour, over 1,000 feet (304^m8) high, with a small round knob on its summit; it separates Ghubbat al Ghazira from Ghubbat ash Shābus. The depths off Ras Dilla are irregular. On the north-western side of the point is a small bay, open north-eastward, with a depth of about 15 fathoms (27^m4). Ghubbat ash Shābus is entered between a point situated about 2½ miles north-north-westward of Ras Dilla (*Lat.* 26° 08' N., *Long.* 56° 29' E.) and Ras Bāshin, about 1½ miles farther northward. The shores of the bay consist of high 25 cliffs, which are steep-to, with here and there small sandy beaches.

20

Shābus is a village on the shore of a small bay on the south-western side of Ghubbat ash Shābus. Two other villages stand on the shores of the northern part of the bay.

Chart 28452, plan of Khasab bay and Khor ash Shumm.

30

Karni Sibi is a remarkable cone with a flat scalloped top, rising to an elevation of 3,010 feet (917^m4), about 3½ miles north-westward of Ras Bāshin. See views on chart 2837a.

Chart 753.

Kaisa peak is a conical hill of light colour, rising to an elevation 35 of over 1,000 feet (304^m8), about 2½ miles northward of Ras Bāshin. Ras Bāshin is about 100 feet (30^m5) high, light red in colour, and steep-to; an islet lies about 8 cables north-eastward of it and about half a mile offshore.

Abu al Mawār, over which there is a depth of one fathom (1^m8), 40 is a reef reported by the Arabs prior to 1870, to lie close offshore near the islet off Ras Bāshin.

Off-lying islet.—Jazirat Umm al Faiyārin, 353 feet (107^m6) high, and of light colour, lies about 3½ miles eastward of Ras Bāshin; its western side is precipitous, but it is possible that landing could be 45 effected on its south-eastern side; the islet is steep-to. See view on chart 2837a.

Tidal streams.—Caution.—In the vicinity of Jazirat Umm al Faiyārin the tidal stream entering the Persian gulf usually sets northward along the coast as far as Masandam island, whence it sets 50 north-westward towards Salāma wa Banāt-hā (page 95) and westward towards Ras Sharaita (page 96); the tidal stream flowing out of the gulf usually sets in the opposite direction. The rate of the

Charts 2837a, 748b.

Chart 753.

stream is from 2 to 3 knots, though off Ras Masandam it may attain a rate of about 4 knots, and perhaps even more at springs.

The tidal streams are very strong near Jazirat Umm al Faiyārin,
5 and from its vicinity to Masandam island and Salāma wa Banāt-hā, with eddies and races, especially near the northern end of the island; sailing vessels should avoid approaching this side of the entrance of the Persian gulf, especially as the wind is uncertain near the high land, often failing or shifting suddenly to the opposite quarter.

10 Dōhat ash Shisha.—Dōhat ash Shisha (Duhat Shisah) is entered between Ras Kaisa, about 3 miles northward of Ras Bāshin, and Ras Qabr al Hindi (Kabr Hindi), about 5 miles farther northward. Ras Kaisa is about 100 feet (30^m5) high and light red in colour; White rock, 37 feet (11^m3) high, lies about 1½ cables north-eastward
15 of it, and is steep-to.

Ras Qabr al Hindi is 1,448 feet (441^m3) high and precipitous. (See view on chart 2837a). There are considerable depths at a distance of half a mile from the cape.

The shores of Dōhat ash Shisha are indented and precipitous,
20 though there are some small sandy beaches in the coves. There are considerable depths close to the cliffs, and the bottom is a fine grey sand. The south-western shore is separated from Khōr ash Shamm (page 99) by a ridge with a least width of three-quarters of a mile; the western shore is separated from Khor Ghubb 'Ali (page 98) by
25 a similar ridge about one mile wide.

Red islet (*Lat. 26° 17' N., Long. 56° 27' E.*), so called from its colour, is the largest and southernmost of three islets, lying about half-way in on the northern side of the bay. It is in two parts, joined by a narrow and stony neck, the southern and highest part rising to
30 an elevation of 183 feet (55^m8). The middle islet is the highest of the three and has sheer cliffs; its craggy peak, 368 feet (112^m2) high, overhangs to the east. The northern islet is a rocky stack, 62 feet (18^m9) high.

In 1935, H.M.S. *Shoreham* obtained a depth of 9½ fathoms (17^m4)
35 midway between Red islet and the middle islet.

Shisha (Shisah) is a small village standing on the western side of the southern part of the bay; there is a larger village about 1½ miles north-westward of it.

Coast.—Ras al Bab, the north-eastern extremity of Masandam peninsula, is a vertical limestone cliff, 453 feet (138^m1) high, situated about 2½ miles northward of Ras Qabr al Hindi, the intervening coast forming a bay. This headland, and the islands and islets off the northern end of the Masandam peninsula have been undermined in places for a considerable distance by the action of the sea.

45 Fakk al As'ad, a strait 3 cables wide, separates Masandam island from Ras al Bab; it is deep and clear of dangers. The strait is frequently used by steam vessels, but great attention must be paid to the helm, and the vessel must be kept in as near mid-channel as possible. Owing to the strong tidal streams and baffling winds, it is
50 not safe for sailing vessels. The north-west-going tidal stream sets against the cliffs on the western side of the strait, and the south-east-going stream on to the south-western part of Masandam island.

Islands and danger.—Masandam (Musandam), an island, 889 feet (271^m0) high, is precipitous all round, except in three or

Chart 753.

four small coves on its eastern side, where are the only landing places. The highest part is near the southern coast, and is in the form of three small peaks. (*See* views on chart 2837a). The island is inhabited. Ras Masandam (Musandam) (*Lat.* $26^{\circ} 23' N.$, *Long.* $56^{\circ} 32' E.$), the northern extremity of Masandam, is a cliff about 100 feet (30^m5) high.

Kachalu or Abu Sufur is a rocky islet in the form of a pillar, 98 feet (29^m9) high, lying about half a mile north-eastward of Ras Masandam with a clear passage between it and the cape.

Tawakkul, an islet, known to the fishermen as Abu Raschid, lies about 1½ miles north-westward of Ras Masandam; it is 453 feet (138^m1) high, steep-to, and precipitous; in appearance it much resembles Great Quoin (*see* below and view on chart 2837a).

Rak Suwaik, a rocky patch, with a least known depth of 4 feet (1^m2), and steep-to, lies about three-quarters of a mile westward of Tawakkul. Kachalu, bearing more than 108° , and open northward of Tawakkul, leads northward of the patch.

As Salāma wa Banāt-hā.—Light.—As Salāma wa Banāt-hā is a group of three islets, also known as the Quoins. *See* view on chart 2837a.

Little Quoin, about 4½ miles northward of Kachalu, is 168 feet (51^m2) high, and is wedge-shaped; the highest and vertical part is at its southern end, and its northern extremity is also a bluff, but smaller. Landing can be effected only on the northern side of the islet, where there is a small stone jetty with a depth of only about one foot (0^m3) alongside. A reef, over which there are depths of from 2 to 6 fathoms (3^m7 to 11^m0), extends about 2 cables northward from the islet.

A light is exhibited, at an elevation of 196 feet (59^m7), from a white framework tower, 79 feet (24^m1) in height, on the summit at the southern end of Little Quoin.

Gap islet, 247 feet (75^m3) high, rises in the form of a peak about one mile north-north-westward of Little Quoin; it is cliffy on all sides.

A small rocky patch, over which the least known depth is 8 feet (2^m4), lies between Gap islet and Little Quoin, about 3 cables from the former.

As Salāma or Great Quoin is 541 feet (164^m9) high and lies about three-quarters of a mile west-north-westward of Gap islet; it is wedge-shaped with the vertical side at its south-eastern end; landing can be effected only on its north-western side. A reef, over which there are depths of from 4 to 6 fathoms (7^m3 to 11^m0), extends about 2 cables northward from the islet.

A small detached above-water rock lies less than half a cable from the northern side of As Salāma.

Tidal streams.—In the vicinity of As Salāma wa Banāt-hā, the tidal streams set north-westward and south-eastward, at a rate of from 3 to 4 knots at springs (*see* page 263). Near Kachalu and Tawakkul the streams are strongest, causing broken water; in calm weather, at springs, the noise of the races, caused by these streams, can be heard at a considerable distance.

Northern and western sides of Masandam peninsula.—Anchorage.—Dangers.—Mountains rise steeply from the northern

Chart 753.

and western coasts of Masandam peninsula, which are everywhere clear of dangers.

Westward of Ras al Bab (page 94) the northern coast is indented by several bays in which there are considerable depths. Ghubbat al Khouse or Khōr Fakudda, the largest bay, is entered between two narrow cliffy points, about $1\frac{1}{2}$ and 3 miles west-south-westward of Ras al Bab; all its sides are precipitous; about 8 cables south-eastward of the northern entrance point is a stack, 146 feet (44^m5) high, which lies about half a cable off the coast to which it is connected at low water. In Khōr Ma'ili (Muaili), the bay next westward, there is a sandy beach at its head, on which are a few huts.

Jabal Ma'ili (Muaili), a sharp peak, rises to an elevation of 1,891 feet (576^m4) immediately southward of the head of Khōr Ma'ili; on southerly bearings its eastern side appears to overhang slightly.

Jazirat Kūn, about 2 miles west-north-westward of Ras al Bab, is 734 feet (223^m7) high; except for small beaches on its northern and southern sides, its sides are precipitous, and in the middle there is a depression forming a kind of saddle. It is known to the fishermen as Jazirat al Khail. See view on chart 2837a.

Kumzār (*Lat. 26° 20' N., Long. 56° 24' E.*) is a fishing village in a valley or gorge about 2 miles north-westward of Jabal Ma'ili; it stands at the head of Khōr Kumzār, a bay entered about $2\frac{1}{2}$ miles westward of the northern entrance point of Ghubbat al Khouse; the bay is deep and open to the nashi, which often blows hard in the winter.

In 1937, H.M.S. *Fowey* obtained good anchorage, sheltered from the shamāl, in a depth of 23 fathoms (42^m1), one mile north-north-eastward of Kumzār.

Aalam is a mountain, with a double summit over a precipice, which rises to an elevation of 1,843 feet (561^m7) about 8 cables southward of Kumzār. Ras Mukhālif is the northern extremity of the projecting point on the western side of Khōr Kumzār.

Jazirat Abu Chir (Sir) or Jazirat Fujar is a cliffy islet lying about $2\frac{1}{2}$ cables northward of Ras Mukhālif; near its southern end is a peaked hill, 446 feet (135^m9) high. Bab Mukhālif, the strait between the point and the islet, is deep, but near its northern side is Katu, a precipitous rock, 235 feet (71^m6) high; the tidal streams through the strait are strong and form eddies.

Mushkan rocks, a group of detached white rocks lying close together and about 15 feet (4^m6) high, lie about 6 cables north-north-westward of Jazirat Abu Chir. The passage between the islet and the rocks is deep.

Between Ras Mukhālif and Ras Sharaita, about $2\frac{1}{2}$ miles north-westward, are three coves all open northward, in which the depths are considerable. At the head of the eastern cove is a small natural boat harbour. The middle cove is named Khōr Kultē; the eastern one, Khōr Khouran; and the western one, Khōr Fordha.

Chart 3452.

Ras Sharaita is the northern extremity of a promontory, on the southern and highest part of which is a round hill, 405 feet (123^m4) high; except where it is joined to the mainland by a short sandy isthmus, about 20 feet (6^m1) high, the sides of the promontory are precipitous.

Chart 3452.

Makhbuk, a perforated rock, lying about three-quarters of a cable northward of Ras Sharaita, is 78 feet ($23^{\text{m}}8$) high, and has vertical sides. The channel between them is clear of dangers and better for small craft than the passage outside where there are always overfalls, but the tidal streams in the channel are strong. 6

Raq Sharaita, over which there is a depth of 13 feet ($4^{\text{m}}0$), lies about 3 cables north-north-eastward of Ras Sharaita..

Chart 753.

Strait of Hormuz.—The Strait of Hormuz lies between the western and northern sides of the Masandam peninsula, and its off-lying islets, and the eastern part of Qishm island (page 112). 10

Chart 3452.

Khōr al Quwai'.—**Light.**—**Dangers.**—**Buoys.**—Khōr al Quwai' (Kuwai) is the strait between the western side of the northern end 15 of Masandam peninsula and Jazirat al Ghanam; it is deep in the fairway and has a least width of about $2\frac{1}{2}$ cables.

Jazirat al Ghanam lies with Khartum Taisar, its northern extremity, about $1\frac{1}{2}$ miles south-westward of Ras Sharaita. At the northern end of the island is a hill 209 feet ($63^{\text{m}}7$) high, which is joined to the main part of the island by a low sandy neck about $1\frac{1}{2}$ cables wide; thence the land gradually rises to an elevation of 606 feet ($184^{\text{m}}7$) near the southern end of the island, which latter terminates in a sheer cliff 350 feet ($106^{\text{m}}7$) high. The island is barren, waterless, and uninhabited. 20 25

Ras Salib (*Lat. $26^{\circ} 22' N.$, Long. $56^{\circ} 22' E.$*), a rocky projection, from 30 to 40 feet ($9^{\text{m}}1$ to $12^{\text{m}}2$) high, resembling a pier, is the western entrance point of the northern end of Khōr al Quwai'. A reef, which dries, extends about three-quarters of a cable from the southern side of Ras Salib. 30

A light is occasionally exhibited, at an elevation of 50 feet ($15^{\text{m}}2$), from a mast on a stone dwelling at the end of Ras Salib.

A reef, which dries one foot ($0^{\text{m}}3$), extends about $1\frac{1}{2}$ cables from a position on the eastern side of Jazirat al Ghanam, about $3\frac{1}{2}$ cables south-westward of Ras Salib light; the eastern edge is marked by a red conical buoy. There are two mooring buoys southward of this reef. 35

There are several small beaches on both sides of Khōr al Quwai', the best landings being on Salib beach, on the southern side of Ras Salib, and Sifa Lehsa, on the mainland nearly opposite it. There is a small stone pier at Salib beach, with a depth of $1\frac{1}{2}$ feet ($0^{\text{m}}5$) 40 at its head.

Khōr Zinzan is a small inlet on the eastern side of Khōr al Quwai' about one mile within its northern entrance.

The shores of Khōr al Quwai' appear to be uninhabited, but there is a small village, Hel Samesim, up in the hills above Khōr Zinzan. 45

The southern entrance of Khōr al Quwai' is on the northern side of a bay in the north-eastern, south-eastern and southern corners of which latter are three coves.

Khōr Gharam (Ghurum), the northernmost of the three, has a deep gorge at its head, at the mouth of which are some date plantations, 50 and a few fishermen's huts. Khōr Bustan, the south-eastern, is a bight on the eastern side of Ras Qabba (Kabba), at the head of which is the little village of Qabba (Kabba). During the summer both these villages are almost deserted.

Chart 3452.

Khôr Jum, the southern cove, lies on the western side of Ras Qabba. The cliffs on the western side of the cove rise to a height of 350 feet (106^m7) at Ras Khtaima, the western entrance point.

5 A rock, over which there is a depth of less than 6 feet (1^m8), lies about a quarter of a cable off Karni El-thour, the southern extremity of Jazirat al Ghanam.

Anchorages.—Directions.—A safe anchorage may be obtained as convenient in Khôr al Quwai', in depths of from 13 to 17 fathoms (23^m8 to 31^m1), sand, gravel, and soft or broken coral. The strait should be entered from northward, and care must be taken to allow for the tidal streams in the approach. On account of the eddies in the strait on the north-going stream, and also of its rate, vessels should not anchor within about three-quarters of a mile of the southern entrance; the eddies are also strong about half a mile southward of Ras Salib.

In 1939, a white mark, not shown on the chart, was painted on the eastern side of the strait, in a position 174° from Ras Salib light (*Lat. 26° 22' N., Long. 56° 22' E.*), distant 1.35 miles; from northward it appears as two white patches, the left hand one of which should be used.

In 1916, H.M.S. *Cyclamen* obtained good anchorage in Khôr Bustan, about 3 cables eastward of Ras Qabba. In this position the tidal streams were almost inappreciable.

25 **Tidal streams.**—The tidal streams in the northern approach to Khôr al Quwai' set east-north-eastward and west-south-westward; in the strait they set northward and southward at a maximum rate of 2 knots; in addition, there is normally a north-going current of from one to 2 knots.

30 It was reported, in 1939, that on two occasions the south-going stream commenced at about the time of high water, ran in that direction for 3 hours and then set northward until the following high water.

Chart 3452, plan of Khasab bay and Khor ash Shumm.

35 **Khôr Ghubb 'Ali.**—Khôr Ghubb 'Ali, on the south-western side of Masandam peninsula, is entered between a point, situated about 1½ miles south-south-westward of Ras Khtaima, and a point about one mile farther southward. These points consist of cliffs about 650 and 300 feet (198^m1 and 91^m4) high, respectively, and that on 40 its northern side rises to a conical hill 1,168 feet (356^m0) high.

Hassa Halima is a rock which dries 2 feet (0^m6), and lies about half a cable offshore, one cable northward of the northern entrance point.

Ghubb 'Ali is a small village near a sandy beach at the head of 45 the inlet; near it are a few trees.

Shamm (Shumm) peninsula separates Khôr Ghubb 'Ali from Khôr ash Shamm; its western side is cliffy. Hassa village stands close to the sandy beach at the head of the inlet, about 2½ miles southward of the southern entrance point of Khôr Ghubb 'Ali.

50 Jabal Shamm (Shumm), a remarkable peak rising to an elevation of 2,921 feet (890^m3) with a high precipice on its south-eastern side, is situated on Shamm peninsula about 1½ miles north-north-eastward of its southern extremity. See views on chart 2837a.

Karni Sibi (see page 93), situated at the head of Khôr ash Shamm,

Chart 3452, plan of Khasab bay and Khōr ash Shumm.

is conspicuous from seaward when off Khōr Ghubb 'Ali ; from that direction its summit is shaped like a sugar-loaf and it appears to be at the head of that inlet.

Khōr ash Shamm.—Dangers.—Khōr ash Shamm (Shumm), also known as Elphinstone inlet, is entered between the western side of Shamm peninsula and Ras Shakhs, situated about $2\frac{1}{4}$ miles north-westward of the southern extremity of the peninsula ; it is backed by precipitous mountains and is accessible only by a narrow and winding entrance that is scarcely perceptible at a short distance offshore ; its shores are deeply indented and in it are several islets ; its southern and eastern shores are formed by the Wali Akbar isthmus which connects the promontory of Ruūs al Jibāl to the Masandam peninsula. In the entrance the tidal streams at springs are strong.

Ras Shakhs (*Lat. 26° 13' N., Long. 56° 17' E.*) is a cliff about 150 feet (45^m7) high. A spit, with a depth of 19 feet (5^m8) at its outer end, extends about 3 cables northward from this point. Al Jubba, an islet, 194 feet (59^m1) high, lies close northward of the point on the western side of Khōr ash Shamm, situated 6 cables south-south-eastward of Ras Shakhs. Jazirat Seghir, 48 feet (14^m6) high, lies in the entrance to Maqlab bay, on the southern side of the main inlet, about $1\frac{1}{2}$ miles eastward of the southern extremity of Shamm peninsula ; on it are the ruins of a telegraph station. A dangerous pinnacle rock, with a depth of 7 feet (2^m1), lies about one cable north-westward of Jazirat Seghir. Jazirat Shamm (Kebir) lies about 3 cables north-north-eastward of Jazirat Seghir, and close off the southern shore of the main inlet.

Ras al Hattm, on the northern side of the main inlet, about $3\frac{1}{4}$ miles east-north-eastward of the southern extremity of Shamm peninsula, is 207 feet (63^m1) high.

Humsi (Hamsi) is a small village standing at the head of the cove which is entered between Ras Shakhs and Al Jubba. Nadhifi is a small village on the southern side of the cove, about $1\frac{1}{2}$ miles south-south-eastward of Al Jubba. The landlocked head of this cove is a convenient place for grounding a vessel. Maqlab (Maklab) bay is separated from the cove in which Nadhifi is situated by a high rocky point ; the hills on the south-western side of the bay are high and steep.

Shamm village is situated near the head of a cove on the northern side of Khōr ash Shamm, entered about $1\frac{1}{2}$ miles north-eastward of the southern extremity of Shamm peninsula. Mida (Maddeh) village stands at the head of the cove, entered on the eastern side of Ras al Hattm.

The village of Sibi, the largest in the vicinity, is situated, close south-westward of Karni Sibi on a sandy beach at the head of a deep cove in the south-eastern corner of the inlet.

Anchorage.—The best anchorage in Khōr ash Shamm is reported to be southward of Jazirat Seghir ; but, in 1923, H.M.S. *Cyclamen* anchored in a depth of 15 fathoms (27^m4) about 9 cables northward of the islet.

Chart 753.

50

NORTH-WESTERN SIDE OF RUŪS AL JIBĀL.—Aspect.—The northern and western coasts of Ruūs al Jibāl promontory rise steeply to mountains, and there are no off-lying dangers.

Charts 753, 2837a, 748b.

Chart 753.

From northward, except when very close inshore, Jabal al Harim, with its small table-top (page 90), is visible over the other mountains. Fine peak (page 101) is situated about 8 miles north-north-westward of Sha'm peak, but does not show up well against the mountains rising to the latter when bearing between about 140° and 170° .

Chart 3452, plan of Khasab bay and Khor ash Shumm.

Coast.—Between Ras Shakhs and Ras Neikhi, the eastern entrance point of Khasab bay, about $1\frac{1}{2}$ miles west-south-westward, the northern coast of Ruūs al Jibāl is high and rocky; between these points there are two coves, the eastern and larger of which is Fanakha (Fenekha) cove, at the head of which there is a village.

Khasab bay.—Anchorage.—Khasab bay is entered between Ras Neikhi (*Lat. $26^{\circ} 13' N.$, Long. $56^{\circ} 16' E.$*) and Ras il Khumi, a rocky point with a small square ruined tower on it, $1\frac{1}{2}$ miles west-south-westward. At the head of the bay, where a sand bank dries out to a distance of about half a mile, is the town of Khasab, standing in a date grove which extends up a wide valley running in a southerly direction with bare steep hills rising on either side; beyond the date grove the valley is cultivated. Little of the town is visible from seaward, with the exception of a fort which stands with its flagstaff near the middle of the beach (*see view facing this page*). The Wali of the Sultan of Muscat resides in the fort; but the Shaikh's house is situated about half a mile inland and is not visible from seaward.

The best landing at high water is on the western end of the beach, and boats approaching it should keep along the western shore of the bay; at low water it is best to keep just eastward of the Wali's fort and follow up the creek which runs along its western wall.

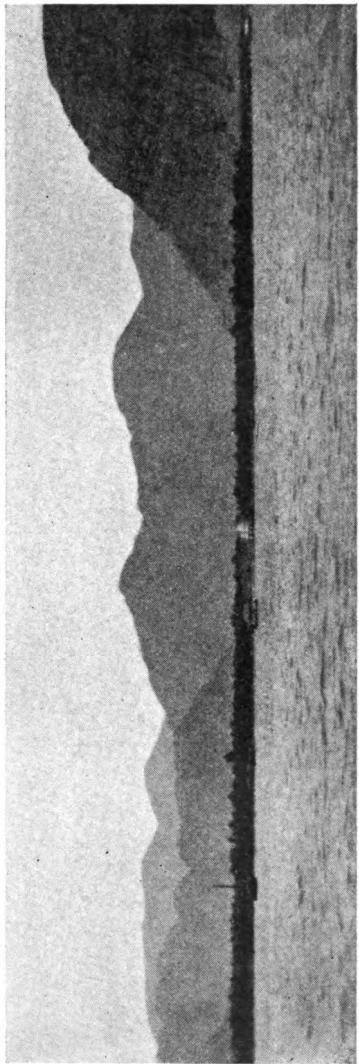
30 Anchorage may be obtained in Khasab bay, but it is open northward to the strong winds which blow in winter from that direction, though they occur very rarely and are of short duration. In summer, vessels should anchor in a depth of about 7 fathoms (12^m8), fine sand; but in winter they should not get into depths of less than 10 fathoms (18^m3); the holding ground is good. The shamāl blows from south-westward and the bay is then well sheltered from wind and sea. In 1931, H.M.S. *Penzance* anchored, in a depth of 3 fathoms (5^m5), sand, with the fort bearing 171° , distant 6 cables.

Coast.—Qida (Kidah) cove is entered between Ras Salti Aleh, about half a mile west-north-westward of Ras il Khumi, and Ras al Rakham, about 6 cables farther westward. It is separated from Khasab bay by a ridge of steep hills. Qida, a small village with a large date grove, stands on the shore at the head of the cove; Makhi, a large fishing village, is situated on the western side of the cove near its entrance.

In 1933, H.M.S. *Fowey* anchored in a depth of 8 fathoms (14^m6) opposite Makhi, about $8\frac{1}{2}$ cables from the head of the cove. Hana cove is entered westward of Ras Ruba, about one mile northward of Ras al Rakham; on its shores are a few huts and a fine date grove.

Anchorage, sheltered from the shamāl, which, in this locality, blows from between west-south-west and west, may be obtained, in depths of from 19 to 22 fathoms (34^m7 to 40^m2), with Ras Shaikh Mas'īd, situated about $1\frac{1}{2}$ miles northward of Ras Ruba, bearing about 306° , distant $1\frac{1}{2}$ miles.

Charts 753, 2837a, 748b.



*Wali's fort, bearing 200°,
distant 3½ cables.*

K h a s a b .

(Original dated 1933.)

Chart 3452, plan of Khasab bay and Khor ash Shumm.

In 1934, H.M.S. *Fowey* anchored off Hana cove with Ras Shaikh Mas'ūd bearing 331° , distant about $1\frac{1}{2}$ miles ; there was little shelter from the shamāl in this position, as the wind blew down a gully in the hillside and reached the mouth of the cove with redoubled force. 5

Charts 3452 plan of Khasab bay and Khor ash Shumm, 753.

Ras Shaikh Mas'ūd is a prominent headland, the northern extremity of which is composed of cliffs about 50 feet ($15^{\text{m}}2$) high and from it the land rises gradually to Fine peak (*Lat. $26^{\circ} 06' N.$, Long. $56^{\circ} 11' E.$*). This peak, 4,526 feet ($1379^{\text{m}}5$) high, is situated about $9\frac{1}{2}$ miles southward of Ras Shaikh Mas'ūd and from eastward or westward appears as a regular cone ; but when seen from northward has a rounded top. (*See view on chart 2837a.*) The long slope on its northern side is very conspicuous from westward. There are two small bights at the northern extremity of the point with white sandy beaches ; 15 on the beach, in the eastern bight, is the tomb of the Shaikh after whom the point is named. On the western side of the point, about one mile from its extremity, is Aida cove, a small bight.

Tidal streams.—The tidal streams eastward of Ras Shaikh Mas'ūd are weak ; but north-westward of a line joining that point 20 and the northern end of Jazirat al Ghanam they set south-westward and north-eastward at a rate of from $1\frac{1}{2}$ to 2 knots.

For tidal streams in mid-channel between Ras Shaikh Mas'ūd and Jazirat Henjām, about 28 miles north-westward, *see page 264.*

Chart 753.

25

Coast.—Anchorage.—Between Ras Shaikh Mas'ūd and Ras al Jādi, about $2\frac{1}{2}$ miles south-south-westward, the coast is bordered by cliffs intermittently and increase in height, until at the latter point, there is a bold cliff, 909 feet ($277^{\text{m}}1$) high, which is conspicuous from north-westward and south-westward. 30

The coast south-westward of Ras Shaikh Mas'ūd is open to the shamāl, from which no shelter can be obtained in that direction ; vessels at anchor off the coast should therefore proceed to sea as soon as there are indications that it is about to blow.

Jirri, situated at the foot of the hills about one mile southward 35 of Ras al Jādi, is a small fishing village standing on a beach which extends as far as Bakha, about $4\frac{1}{2}$ miles south-south-westward. Jādi village stands about $3\frac{1}{2}$ miles south-south-westward of Jirri, and between them are some date trees.

Bakha village stands on the shore of a small bight, the western 40 entrance point of which projects slightly from the general line of the coast. The bight is open northward and depths of 3 fathoms ($5^{\text{m}}5$) extend about 7 cables from the beach ; but there are depths of from 5 to 10 fathoms ($9^{\text{m}}1$ to $18^{\text{m}}3$) about $1\frac{1}{2}$ miles north-westward of the bight. There are four forts at Bakha, one of which is in ruins ; 45 the second, is a square fort, also in ruins but with a watch tower still standing, situated on a hillock about half a mile eastward of the village ; the third, the position of which is indicated on chart 753, is a large fort at which the Shaikh's flag is displayed, and is situated at the foot of a hillock, but is not easily identified from seaward as 50 its colour blends exactly with that of the hillock ; the fourth, and by far the most conspicuous, stands on the western entrance point of the bight, the tower at one of its angles being higher than the others. Inland of the village is a cultivated plain and some date groves.

Chart 753.

Between Bakha and Ras ash Sha'm, $6\frac{1}{2}$ miles south-south-westward, the coast is steep-to and rocky, interspersed with small sandy beaches. Fadgha (Fudar), Ghamda (Ghamtha), and Tibāt (Tibba) are fishing villages on the beaches, about $2\frac{1}{2}$, $3\frac{1}{2}$, and $4\frac{1}{2}$ miles, respectively, south-south-westward of Bakha, with a few date trees near each.

Ras ash Sha'm (*Lat. 26° 03' N., Long. 56° 05' E.*) rises gradually to the summit of a mountain, about 2,500 feet (762^m0) high and 2 miles inland, which has a notch in it and is conspicuous from south-westward and northward. From Ras ash Sha'm, the range of mountains forming the western side of Ruūs al Jibāl trends southward, but the coast of Trucial 'Omān (see page 158) extends in a south-westerly direction becoming low and characteristic of the whole of the southern shore of the Persian gulf.

COAST OF BIĀBĀN.—General remarks.—The coast of this district of Persia lies on the eastern side of the entrance of the Persian gulf between Mināb on the north and Jāsk on the south. Ranges of mountains rise some distance inland and in clear weather are good marks. There are a few villages and towns on this coast. The district is thinly populated, the inhabitants are poor and mostly live in huts, those on the coast being fishermen.

No supplies are to be obtained.

The coast is very low, and a plain of varying width extends inland to the foot of the mountains. A feature of the district is the *Mins*, or dangerous quicksands, formed by the sun drying the surface ground while the soil below remains in a semi-fluid condition; they occur chiefly upon the coast between the firm damp strip near the water's edge and the soft dry ground farther inland.

The coast is imperfectly known and must be approached with great caution for in most places there are considerable depths close to the outer edge of the coastal bank and soundings afford but little warning. The coast is visible only a short distance, and care must be exercised, owing to the appearance of the high land in the background, to avoid over-estimating the distance of the vessel from it.

There is no shelter from the shamāl, and anchorage off the coast is bad.

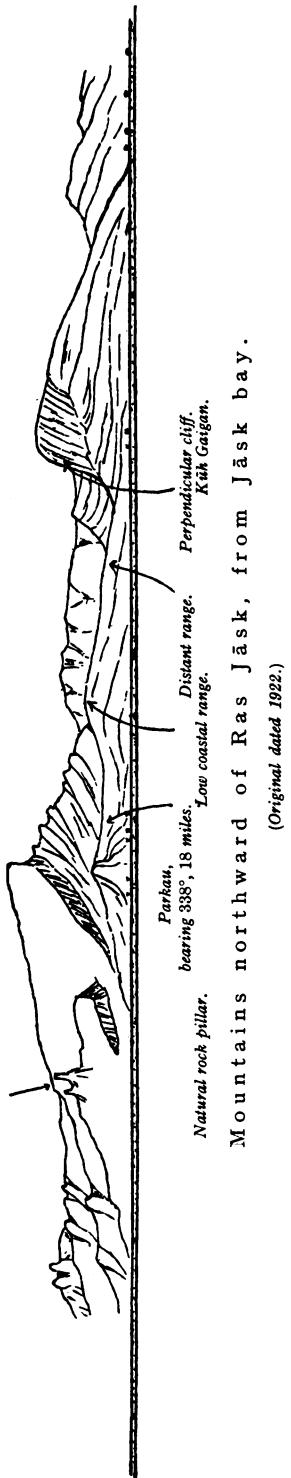
Coast.—Aspect.—The coast between the entrance to Jāsk creek and Ras al Kūh, about 27 miles west-north-westward, is low and sandy with tufts of grass; there are several shallow creeks which at times connect the mangrove swamps behind the coast to the sea; at some distance inland are some date groves.

Khōr Hamād, the most important of these creeks, is used by native craft; its mouth is situated about 8 miles eastward of Ras al Kūh, and into it flows the Gangān river.

Several prominent mountains and hills in this vicinity are visible from seaward long before the coast.

Kūh Gaigan (Jabal Dangiya), between which and Kūh-i-Loh is a great valley, is an isolated peak, rising to an elevation of 1,630 feet (496^m8), about $12\frac{1}{2}$ miles northward of Ras Jāsk; its western side forms a great bluff which, except from westward, when it is less conspicuous, shows up well against the background of mountains.

Parkau (Kūh Bahmadi), the summit of which rises to an elevation of over 3,000 feet (914^m4) 7 miles north-westward of Kūh Gaigan, is



Parkau,
bearing 338°, 18 miles.
Natural rock pillar.
Distant range.
Low coastal range.
Kih Gagan.

Mountains northward of Ras Jäsk, from Jäsk bay.
(Original dated 1922.)



Fort,
bearing 026°,
6 miles.

Kühistak village from south-south-westward.
(Original dated 1910.)

Chart 753.

separated from the latter by a gap with precipitous sides ; Parkau (*Lat. 25° 56' N., Long. 57° 38' E.*) has a long slope on its western side and a very serrated crest ; on its southern slope is a natural pillar of rock about $3\frac{1}{2}$ miles north-westward of Kūh Gaigan. (*See* view 5 facing this page, and on chart 2837a). From Parkau the mountains trend north-north-westward with a valley between them and the coastal ranges

Zir kūh (Jabal Khōr Hamād), the eastern end of which is situated about 9 miles westward of Kūh Gaigan and 4 miles inland, is a ridge 10 about 300 feet (91 m 4) high, with cliffs on its southern side, extending about 2 miles westward.

Dangers.—Caution.—The coastal bank, with depths of less than 3 fathoms (5 m 5), extends in places about $1\frac{1}{2}$ miles offshore between Jāsk bay and Ras al Kūh. 15

Gahha shoal, a small $1\frac{1}{2}$ -fathom (2 m 7) soft patch which is steep-to, lies about 3 miles offshore, about 16 miles west-north-westward of Ras Jāsk.

A bank, over which there is a depth of 10 fathoms (18 m 3), lies about $4\frac{1}{2}$ miles offshore and about $10\frac{1}{2}$ miles south-eastward of Ras 20 al Kūh.

Between Ras Jāsk and Ras al Kūh, vessels should not approach within depths of less than 27 fathoms (49 m 4) when in the vicinity of Gahha shoal.

Coast.—Anchorage.—Ras al Kūh is very low ; the coastal bank, 25 with depths of less than 3 fathoms (5 m 5), extends half a mile offshore, the outer edge being steep-to ; the point should therefore be given a good berth, especially at night. The coast is bordered by a sandy beach with tufts of grass, within which the land is swampy for several miles. A small creek, the entrance to which is close north-westward 30 of the point, is frequented by native craft ; drying sands extend about 3 cables from its mouth. Mugmālam, a small village with a date grove, is situated about 3 miles north-eastward of the point.

Kūh-i-Mubārak, situated in the swampy plain about $3\frac{1}{2}$ miles northward of Ras al Kūh and about one mile inland, is a very remarkable 35 isolated rock ; it is light in colour, and 333 feet (101 m 5) high ; there is a small hole in its upper eastern corner, which appears open from north-westward and south-eastward ; except when seen against the light-coloured hills behind, the rock is conspicuous ; from north-eastward and south-westward it looks, when the low land is not in 40 sight, like an outlying rock. *See* views on charts 753, 2837a.

Anchorage may be obtained, in depths of from 6 to 10 fathoms (11 m 0 to 18 m 3), from a half to three-quarters of a mile offshore, about one mile south-eastward of Ras al Kūh ; but it is not sheltered from the shamāl which, off the point, blows from a little northward of 45 west.

Aspect.—The Bluff, about 3 miles inland and $4\frac{1}{2}$ miles north-north-eastward of Kūh-i-Mubārak, rises to an elevation of 720 feet (219 m 5) ; it is part of a light-coloured ridge trending north-north-westward and increasing in height from a position about 3 miles north-eastward of Kūh-i-Mubārak. On the western side of the Bluff, a white rocky column stands out conspicuously. 50

Jabal Karāī (Karya) is a remarkable hill of light colour, 1,910 feet (582 m 2) high, situated in the same ridge as, and about 16 miles north-

Chart 753.

ward of, the Bluff. When seen from westward it presents a jagged outline but from north-westward or southward it appears as a peak with almost precipitous sides. (*See views on chart 2837a.*)

5 Quoin hill (*Lat. 26° 00' N., Long. 57° 16' E.*), about $6\frac{1}{2}$ miles north-north-westward of the Bluff, rises to an elevation of 720 feet (219^{m5}) about $1\frac{1}{2}$ miles from the coast ; it is the summit of a comparatively short ridge lying parallel with, and between, the coast and the ridge in which are the Bluff and Jabal Karāi ; from westward Quoin hill

10 appears conical in shape.

Zangiak (Jabal Bis) rises to an elevation of 3,964 feet (1208^{m2}) about 14 miles east-north-eastward of Jabal Karāi ; except from close inshore, when it is obscured by the lower intervening ranges, it is conspicuous ; from north-westward or southward it appears conical

15 (*See view on chart 2837a.*). There is a valley between Zangiak and the ridge in which is Jabal Karāi.

Northward of Jabal Karāi, the coastal hills trend north-north-westward and are of irregular outline but have no remarkable peaks.

Coast.—Dangers.—Proserpine rock, about $9\frac{1}{2}$ miles northward of 20 Ras al Kūh, and close offshore, is about 70 feet (21^{m3}) high, and wedge-shaped, the bluff being at its western end.

A tower stands on the coast about $1\frac{1}{2}$ miles northward of Proserpine rock, and northward of the tower is a small creek in which the depths are from 2 to 4 feet (0^{m6} to 1^{m2}). The village of Sarocan is

25 situated at the head of the creek and its inhabitants were quite friendly when visited by H.M.S. *Proserpine*, in 1908.

Ras-ash-Shir is a very low point situated about 4 miles north-westward of Sarocan ; there are one or two huts on the point, and flats dry off it for a distance of nearly half a mile. Tūjak is a small 30 village about 2 miles north-eastward of the point.

A flat of sand and mud, over which the depths are less than 3 fathoms (5^{m5}), fringes the coast northward of Proserpine rock, and off Ras-ash-Shir extends about 3 miles offshore. Ras-ash-Shir and the coast northward of it should be given a wide berth, especially at night or 35 in thick weather.

Kunāri point lies about 12 miles northward of Ras-ash-Shir and is very low, being partly covered at high water ; on the intervening coast are patches of mangroves. The shoal flat of sand and mud gradually decreases in width northward of Ras-ash-Shir until off 40 Kunāri point its edge lies about $1\frac{1}{2}$ miles offshore.

A detached shoal, over which there is a depth of 4 fathoms (7^{m3}), lies about $2\frac{1}{2}$ miles south-westward of Kunāri point.

Between Kunāri point and Tarūl (Turu), a small village, about 20 miles northward, the coast is low, thence for some distance north-45 ward there are sand hills on the coast.

Gunāri (Kunari) river is entered about 6 miles north-north-westward of Kunāri point ; in 1909, there was a depth of 4 feet (1^{m2}) over the bar and about 14 feet (4^{m3}) inside. In 1910 the river was ascended in a northerly direction by boats from H.M.S. *Redbreast* for a distance 50 of about $3\frac{1}{2}$ miles ; it then appeared to divide into two branches, one flowing from north-eastward and the other from north-north-westward. The banks of the river are low and covered with mangroves. The vicinity of the river appeared to be uninhabited.

About 8 miles farther northward is the entrance to Gaz river,

Chart 753.

which appears to be deep enough for access of coasting craft ; there are no marks to identify its mouth from seaward. Bandar Sirik, a small backwater used by dhows, is situated near a sandy point about 5 miles northward of the mouth of Gaz river ; its entrance is difficult to identify from seaward as the coast is low with sand dunes on the foreshore. Behind the sand dunes are date groves extending to the foot of the hills. The village of Sirik is situated some distance inland and is hardly visible from seaward. Landing may be effected about a quarter of a mile northward of Bandar Sirik. There are 10 numerous date trees in the vicinity of Tarū (*Lat. 26° 32' N., Long. 57° 07' E.*).

Girau, about 3 miles northward of Tarū, is a small village, at which there is a fort and a date grove, standing about half a mile inland. The fort, though white, is not conspicuous from seaward, being situated 15 in the date grove. The sand hills on the coast are from 30 to 40 feet ($9^{\text{m}}1$ to $12^{\text{m}}2$) high, but in them is a gap which serves to identify the position of the village. The country beyond these sand hills appears to be cultivated. The hills approach within a distance of 3 miles from the coast in the vicinity of Girau.

The villages of Bundrām, Žiyārat (Ziarat), and Kalla are situated about $1\frac{1}{2}$, $4\frac{1}{2}$, and $6\frac{1}{2}$ miles, respectively, northward of Girau ; near Kalla a low spur of the coastal range approaches the coast. About $7\frac{1}{2}$ miles northward of Kalla is Kūhistak, a village which may be identified by its fort, from 80 to 100 feet ($24^{\text{m}}4$ to $30^{\text{m}}5$) high, standing 25 on a small hill close eastward of it ; there are some date trees in its vicinity. (*See* view facing page 103).

Tidal streams.—Off the coast of Biābān the tidal streams set northward and southward.

Though weak eastward of Ras al Kūh, the tidal streams attain 30 considerable strength when rounding that point and along the coast northward of it, the rate at spring tides being sometimes as much as 2 knots.

Charts 753, 2837a.

BANDAR 'ABBĀS AND APPROACHES.—Aspect.—This 35 town is situated on the northern side of the entrance of the Persian gulf about 45 miles north-westward of Kūhistak. It is approached between Jazirat Hormuz, on the north-eastern side, and Jazirat Lārak and the eastern end of Qishm island, on the south-western side. The town stands on a bare sandy plain which rises gradually 40 to some hills about 100 feet ($30^{\text{m}}5$) high from one to 2 miles inland ; farther inland the country becomes broken and reaches elevations of from 500 to 700 feet ($152^{\text{m}}4$ to $213^{\text{m}}4$) ; still farther inland it is mountainous.

Chart 2837a.

Kūh-i-Gināu (*Lat. 56° 10' N., Long. 27° 25' E.*), a detached mountain of irregular outline, rises to an elevation of 7,690 feet ($2343^{\text{m}}9$) about 45 15 miles north-north-westward of Bandar 'Abbās. (*See* view facing page 107).

Khush kūh, about 33 miles north-eastward of Bandar 'Abbās, 50 rises to an elevation of 8,500 feet ($2590^{\text{m}}8$) and is very conspicuous from the entrance of the gulf ; the upper part of the western side of the mountain is a bluff and about 8 miles eastward of its summit there

Chart 748b.

Chart 2837a.

is a remarkable cone about 5,000 feet (1524^m0) high. (*See* view on chart 2837a).

Kūh-i-Fūrgūn, about 42 miles northward of Bandar 'Abbās, rises to an elevation of 10,660 feet (3249^m2) and is visible in clear weather through the large valley between Kūh-i-Gināu and Khush kūh ; in winter it is covered with snow.

Chart 753.

Between Kūhistak and Bandar 'Abbās, the coast is low and swampy, with mangroves in places. This part of the coast is seldom visited by Europeans. In the vicinity of Kūhistak, the hills recede from the coast, leaving a plain from 10 to 20 miles or more wide, parts of which are fertile. Inland of this plain are high mountains, on the summits of which snow lies for months.

15 About 20 miles north-eastward of Kūhistak is an overhanging peak or sharp pinnacle of the mountains, about 3,000 feet (914^m4) high, which from south-south-westward appears as two peaks ; it is situated at the southern end of a level-crested range which extends north-north-westward for about 6½ miles to a ragged peak of about the same elevation. (*See* views on chart 2837a).

Coast.—Off the coast northward of Kūhistak the shamāl blows from west-south-westward and raises a heavy sea. The anchorage off Qishm (page 109) affords the best shelter in this vicinity.

25 Khargūn (Khagún), a small village about 10 miles north-north-westward of Kūhistak, may be identified by a turtle-backed hillock and some date trees ; the land in the vicinity is low and sandy. Close northward of the village is a creek, into which the Mazāvi river flows, and which affords shelter to boats.

The mouth of Mināb river is situated about 5½ miles north-north-westward of that of Mazāvi river. In ordinary times very little of the water in the river flows into the sea as it is nearly all diverted by irrigation canals.

A detached shoal, with a depth of 5 fathoms (9^m1), and a bank, with a depth of 10 fathoms (18^m3), were reported, in 1910, to lie about 35 5½ miles west-south-westward and 6½ miles south-westward of the mouth of Mināb river.

40 Khōr Mināb, a salt water mangrove creek, is entered about 6 miles north-westward of the mouth of Mināb river and is the port of Mināb ; it can be entered by small craft of 20 tons and less ; but the bar, which nearly dries, is impracticable during a shamāl. There are very similar creeks on either side of Khōr Mināb. The middle of the bar was, in 1915, marked by a wooden post, about 6 feet (1^m8) high. The banks of the river are flooded at high water. Local knowledge is necessary to enter the river.

45 The town of Mināb (*Lat.* 27° 09' N., *Long.* 57° 05' E.) is situated about 13 miles north-eastward of the mouth of Mināb river ; the fort stands on a hill close to the river, and appears large, though very dilapidated. The town is a collection of mat huts ; the inhabitants are friendly towards Europeans. The district produces dates, plantains, mangroves, wheat, henna, etc. The exports are dates, henna, wool, and ghi ; the imports are principally rice and piece-goods.

The coast west-north-westward of the mouth of Khōr Mināb is low and swampy, the eastern portion being covered with mangroves ; it is fringed by a mud flat, which extends from one to 2 miles offshore.

Charts 2837a, 748b.

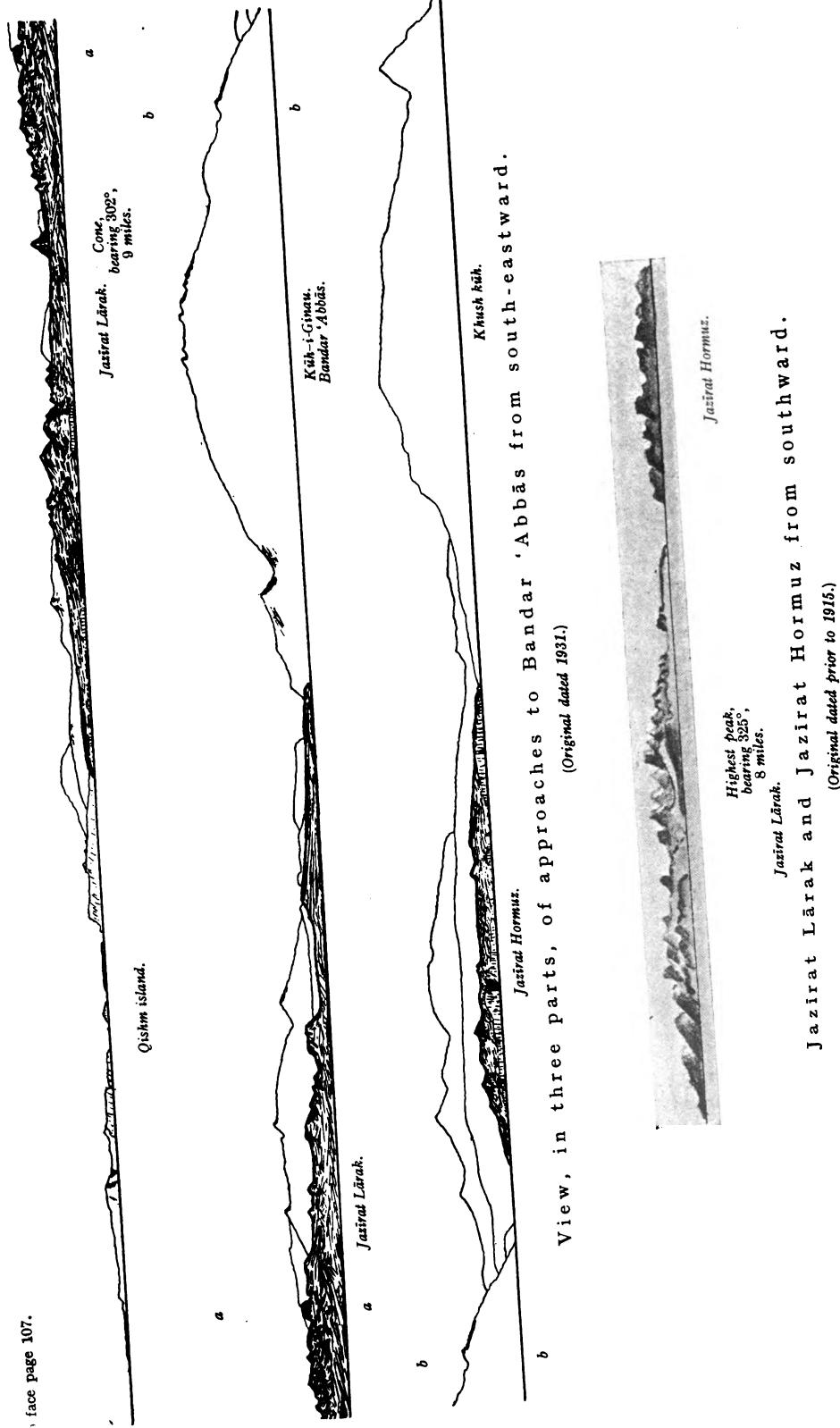


Chart 753.

Jazirat Hormuz.—Dangers.—The northern point of this island is the extremity of a plain lying within $2\frac{1}{4}$ miles of the mainland about 17 miles westward of the mouth of Khör Mināb. The island is mostly hilly, the hills being about 300 feet (91^m4) high, with a very rugged outline and marked by a variety of colours; in the centre of the island, a few white peaks, resembling snow-clad hills, rise above the rest, the highest peak attaining an elevation of 690 feet (210^m3); it has a very sharply-defined summit and a long slope on its eastern side. The hills, with the remarkable exception of the white peaks, and a range near the southern and south-eastern coasts, are chiefly of rock salt with a thin incrustation of various coloured earths; on the eastern coast are a few rocky hillocks; the southern and south-western coasts are cliffy. (See views facing this page and on chart 2837a). 15

On the northern extremity of the island are the ruins of a Portuguese fort, and about 2 cables southward of it is a minaret, 70 feet (21^m3) high. Close southward of the fort is Hormuz village, a collection of mat huts.

Red oxide is worked in the interior of the island and is shipped near the fort into dhows, for transport to steam vessels which call for that purpose. The north-eastern side of the fort presents a remarkable spectacle from seaward, being coloured a vivid red purple by the dust from the oxide. 20

The eastern and south-eastern coasts of the island are fringed with reefs to a distance of from 2 to 6 cables offshore. 25

A shallow flat, over which the depths are less than 3 fathoms (5^m5), extends about $1\frac{1}{2}$ miles from the western side of the island.

Euphrates patch, over which there is a depth of 2 fathoms (3^m7), lies about 2 miles south-westward of the south-western extremity of the island; it is steep-to, except on its north-eastern side which is joined to the flat extending from the western side of the island. 30

A shoal spit, over which the depths are less than 3 fathoms (5^m5), extends about 2 miles westward from the Portuguese fort and thence north-north-westward nearly $2\frac{1}{2}$ miles across the western approach to the channel northward of Jazirat Hormuz. 35

A spit, with depths of less than 3 fathoms (5^m5), extends about 6 cables eastward from the northern extremity of the island, and a flat, which dries, extends about $3\frac{1}{2}$ cables northward from the eastern part of the northern coast, with depths of less than 3 fathoms (5^m5), half a mile farther northward. 40

A flat, with depths of less than 3 fathoms (5^m5), fringes the mainland opposite Jazirat Hormuz, and extends offshore to within three-quarters of a mile of the northern extremity of the island. A spit, with a depth of 3 fathoms (5^m5) at its outer end, extends southward from the edge of this flat, about $2\frac{1}{2}$ miles east-north-eastward of the fort. 45

Anchorage.—Directions.—Anchorage may be obtained on the northern side of Jazirat Hormuz (*Lat.* $27^{\circ} 03' N.$, *Long.* $56^{\circ} 28' E.$), with the Portuguese fort bearing about 236° , distant half a mile, in depths of from 7 to 8 fathoms (12^m8 to 14^m6), mud; small vessels anchor nearer the village. The anchorage is sheltered, except from the nashi, on the occurrence of which vessels may shift to the western side of the northern point of the island. 50

This anchorage should be approached with caution as the channel

Chart 753.

between Jazirat Hormuz and the mainland has not been thoroughly surveyed.

From a position about one mile eastward of the eastern side of the island a vessel should steer north-north-westward until the Portuguese fort bears 255° whence a westerly course may be steered until it bears 236° ; the fort may then be approached on the latter bearing, anchorage being obtained as previously directed.

This channel is used by vessels, calling to load red oxide, with a draught sometimes as much as 25 feet ($7^{\text{m}}6$); H.M.S. *Triad* reported in 1924, that, from soundings obtained whilst passing through this channel, it would appear that the least depth in the fairway is about $3\frac{1}{2}$ fathoms ($6^{\text{m}}9$).

To proceed north-westward from the anchorage, a vessel should pass about a quarter of a mile northward of the fort, and bring a ruined chapel on the northern coast of the island open its own width north-eastward of the high south-eastern tower of the fort, bearing 125° , astern; this will carry the vessel through the western channel in a least depth of about $2\frac{1}{2}$ fathoms ($5^{\text{m}}0$); when the high peak of Jazirat Lārak bears 188° , course may be altered westward or south-westward as requisite.

Jazirat Lārak.—Anchorage.—This island, the north-eastern extremity of which lies about $9\frac{1}{2}$ miles south-south-westward of the southern end of Jazirat Hormuz, is generally barren; the highest peak of its rugged hills is square in shape and rises to an elevation of 510 feet ($155^{\text{m}}4$). A conical peak, 456 feet ($139^{\text{m}}0$) high and situated about one mile south-westward of the highest peak, shows up best from south-eastward and north-westward. There are two table-topped hills close together on the eastern side of the island which show up well from north or south, but are obscured against the hills behind them when viewed from eastward. (See views facing page 107 and on chart 2837a).

The coasts of the island, generally, are steep-to; but the reef extends for a distance of about 4 cables from its western side.

At night, Lārak and Hormuz are very similar in appearance, from south-eastward; but the depths at similar distances are greater south-eastward of Lārak than those south-eastward of Hormuz.

On the northern side of Lārak is a low sandy point, nearly 2 miles eastward of which is an old fort and the little fishing village of Labtiyāb.

The island is covered with stunted vegetation, and near the village are some date palms.

Anchorage may be obtained in depths of about 13 fathoms ($23^{\text{m}}8$), off the northern coast of Jazirat Lārak (*Lat.* $26^{\circ} 51' N.$, *Long.* $56^{\circ} 21' E.$), between the low point and the village, about half a mile offshore and 3 cables from the edge of drying sands; off the village, the bottom is rock, and there the coastal reef extends offshore for about one cable. The anchorage is sheltered only from the shamāl and is not recommended.

Qishm.—The town of Qishm, situated on the eastern end of Qishm island (page 111), is well-built and stands on a fairly level, sandy site close to the water's edge; earthquakes, however, have destroyed a great part of it. There is a small date grove on either side of the town and at a short distance southward of it are several domed water reservoirs.

Chart 753.

The land behind the town, and southward of it, rises in a gradual slope to a hill, the northern and western sides of which are precipitous ; its flat summit, 580 feet (170^{m7}) high, is situated about 3 miles westward of the town (*Lat. 26° 58' N., Long. 56° 17' E.*). 5

Meat or cattle, vegetables, and bread can be obtained.

Shoals.—Light-buoy.—Several shoals, over which the depths are from 2½ to 3 fathoms (4^{m6} to 5^{m5}), sand, lie from one to 1½ miles offshore eastward and north-eastward of Qishm town ; these shoals lie on the coastal bank which extends from the north-eastern end of Qishm island, and are steep-to on their outer edges ; off the town the depths shoal rapidly towards the coast. A flat, which dries, extends nearly 2 cables offshore on the northern side of the town, and the coastal bank extends 3 cables from the eastern side ; this bank fringes the coast southward of the town, and at 1½ miles in that direction 15 extends 6 cables offshore with depths of less than 3 fathoms (5^{m5}).

A light-buoy, exhibiting a *white flashing* light, is moored about 1½ miles eastward of the fort at Qishm which is conspicuous, and marks the southern side of a channel, half a mile wide, in which the depths are about 3½ fathoms (5^{m9}) ; this channel leads, between the 20 shoals, to the anchorage.

Anchorage.—Directions.—Anchorage may be obtained anywhere northward of the flat off Qishm ; a good position is in a depth of 6 fathoms (11^{m0}), about 2 miles offshore.

Vessels whose draught will permit them to cross the flat may anchor 25 in a depth of 5 fathoms (9^{m1}), mud, with the fort bearing 180°, distant about three-quarters of a mile.

The anchorage near the town is well sheltered from the shamāl, and the nashi does not raise a heavy sea ; but the tidal streams cause a vessel at anchor there to lie broadside on to the prevailing wind and 30 to ride uneasily.

Off the town and over the shoal banks, the tidal streams attain a rate of 2 knots at springs, and cause ripples.

A vessel approaching the anchorage off Qishm should proceed as for Bandar 'Abbās (see page 110) until the fort at Qishm bears 210°, 35 when she should alter course to pass between the 2½- and 3-fathom (5^{m0} and 5^{m5}) patches north-eastward of the town and thence steer for the anchorage. Or, preferably, when the fort at Qishm situated at the southern end of the town, bears 278°, she should steer for it on that bearing until abreast the light-buoy when she should alter course 40 to 300° for the anchorage. In either case caution is necessary.

It is not advisable to approach the anchorage from southward without local knowledge, as, in 1923, the fort was difficult to identify.

Prohibited anchorage.—Anchorage is prohibited between lines drawn north-north-eastward from positions on the coast about 5 and 45 9 cables, respectively, north-westward of the fort at Qishm.

Chart 3599, plan of Bandar Abbas.

Bandar 'Abbās.—The town of Bandar 'Abbās is fronted by a beach of firm sand, which dries about one cable from high-water mark ; landing on it at low water is bad, and at times the surf is very heavy. 50 The town is of considerable importance, being the distributing centre for several towns in the interior. The town is the seat of the Persian Deputy Governor, who is subordinate to the Governor of the Gulf Ports.

Chart 3599, plan of Bandar Abbas.

There is a pier in the middle of the foreshore in front of the Custom house (*Lat. 27° 11' N., Long. 56° 17' E.*). The masonry portion of the pier dries and lighters can go alongside only from about 3 hours before 5 until 3 hours after high water; but it has been extended on iron piles, with steps at its head in a depth of about 3 feet (0^m9). There is a flagstaff on the pier.

Nāiband village is situated about 2½ miles north-eastward of the pier and its vicinity may be identified by a conspicuous date grove.

10 Ab-i-Mūrgh, immediately eastward of Bandar 'Abbās, and the stream on which Nāiband stands appear to be usually dry.

The British Consulate is a conspicuous, isolated, grey stone, two-storyed building, surmounted by a flagstaff, situated about one mile north-eastward of the pier.

15 Sūru (Siru) village is situated about 2 miles west-south-westward of the pier; between them is Khazar mosque, which is conspicuous.

Anchorage.—Tidal streams.—Vessels usually anchor eastward and in the vicinity of the red buoy (*see below*). During fine weather, small craft anchor closer inshore. The holding ground is good and 20 the anchorage is well sheltered, except from south-eastward.

The tidal streams at the anchorage set westward and eastward.

Prohibited anchorage.—Buoy.—Anchorage is prohibited in the area indicated by pecked lines on the plan. A red can buoy, surmounted by a staff and globe, is moored on the eastern limit of the 25 prohibited anchorage about 2 miles offshore south-south-eastward of the British Consulate.

Chart 753.

Directions.—Vessels approaching Bandar 'Abbās or the anchorage off Qishm may pass on either side of Jazirat Lārak.

30 When passing between Jazirat Hormuz and Jazirat Lārak, the latter may be approached to a distance of half a mile but the eastern end of Qishm island must be given a berth of at least 2 miles to clear the shoals off it, and Hormuz must not be closed within a distance of 2½ miles to avoid Euphrates patch (*Lat. 27° 01' N., Long. 56° 24' E.*).

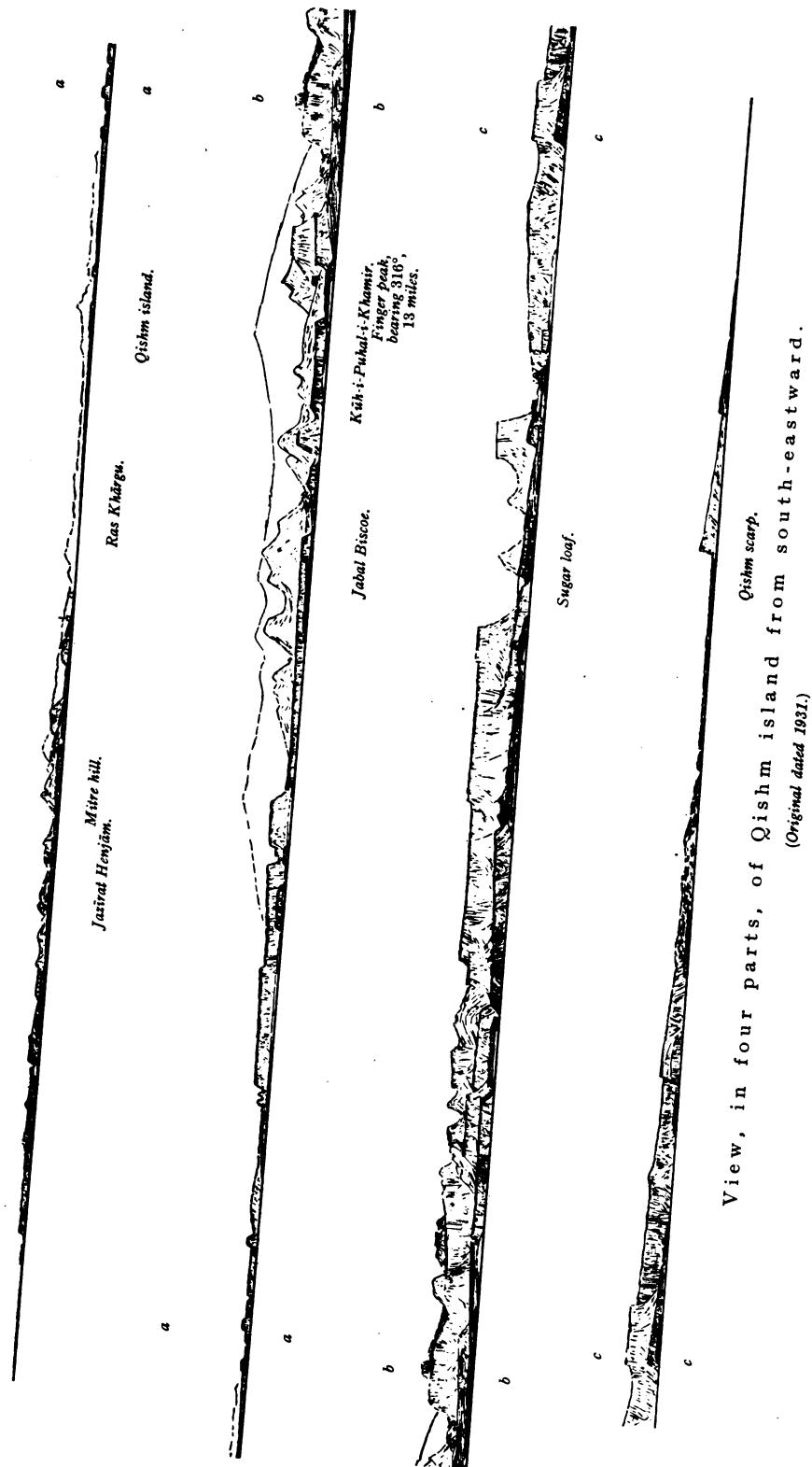
35 If passing between Lārak and Qishm island, the shoal ground off the western side of the former must be avoided, and the eastern end of the latter should be given a berth of at least 2 miles to clear the shoals off the town of Qishm. The coast southward of the town of Qishm can be approached to a distance of one mile until nearing the off-lying 40 patches, but the depths shoal quickly to the reef fringing the coast. It is advisable to keep on the Lārak side of the channel as the currents are irregular near the shoals off the eastern end of Qishm island.

Chart 3599, plan of Bandar Abbas.

Trade.—Supplies.—The principal exports are cotton, carpets, 45 dried fruits, dates, almonds and pistachio nuts; the chief imports are cotton piece goods, sugar, tea, matches and woollen goods.

Fresh provisions may be obtained. A small quantity of water can be obtained for boiler purposes.

Climate and health.—The climate of Bandar 'Abbās is not 50 unhealthy, and from October to April, inclusive, is extremely pleasant. In winter, when the mountains northward are covered with snow, the air is dry, clear, and bracing. In summer, however, these rocky masses reflect heat on to the plain below, and the climate is damp, hot, and relaxing, but is not such as to render it by any means in-



View, in four parts, of Qishm island from south-eastward.
(Original dated 1931.)

Chart 3599, plan of Bandar Abbas.

supportable to a European who is comfortably lodged, and the land and sea breezes, which are then fairly regular, do much to mitigate the heat. The prevailing diseases are malarial fever and diseases of the skin ; other diseases seldom exist in epidemic form. Sanitation 5 of even the most elementary description is unknown.

Consular officer.—A British Consular officer is stationed at Bandar 'Abbās (*Lat. 27° 11' N., Long. 56° 17' E.*).

Chart 753.

QISHM ISLAND.—**Aspect.**—Qishm island or Jazirat-at-Tawila 10 is the largest island in the Persian gulf ; it lies nearly parallel with the coast of Persia, from which it is separated by Clarence strait. See page 119.

It rises in light-coloured table-topped hills with precipitous broken-down sides, in many places remarkable in appearance. (See view facing 15 this page). On the island are a few towns and numerous villages ; the inhabitants are for the most part poor and only trade in the barest necessities of life. There is much game on the island ; wild goats, partridges, and rock-pigeons abound in the hills, and on the plains are to be found many small antelopes or gazelles. 20

From May to October, inclusive, the climate is exceedingly trying.

Westward of the hills behind the town of Qishm, a low plain extends across the island for several miles, and farther westward are some table-topped hills which decrease in height towards Ras Khārgū, situated about 25 miles south-westward of the town, and are precipitous 25 on their seaward sides. A white cone or sugar-loaf, 446 feet (135^m9) high, situated about 2 miles northward of Sūzeh, a small village with a date grove on the south-eastern coast, about 15 miles south-westward of Qishm, rises between a long plateau and a remarkable white hill, 509 feet (155^m1) high, with a small cone at its southern end ; all 30 show up well from seaward.

Behind the coastal hills are Finger peak, 941 feet (286^m8) high, and Jabal Biscoe, 994 feet (303^m0) high, situated about 6½ and 8½ miles, respectively, westward of the white cone. Jabal Biscoe has a peaked summit, which shows up well from southward. 35

Coast.—Dangers.—The shores of the bight south-westward of the hill behind Qishm are low and sandy but farther south-westward, as far as Ras Khārgū, the coast is a succession of rocky patches between which are small sandy beaches.

This coast is open to the shamāl which in this locality blows from 40 between south-west and west-south-west.

About 2 miles north-eastward of Sūzeh is a flat rocky islet 59 feet (18^m0) high with vertical sides, lying about half a mile off a rocky point ; within this islet is a small bay in which there are depths of about 1½ fathoms (2^m7) and in which native craft shelter during the 45 shamāl ; about one mile north-eastward of the islet are three others lying about 4 cables offshore with foul ground between them and the coast ; they are smaller than the first mentioned, the middle and largest being 56 feet (17^m1) high, the northern one is a flat ledge of rock only one or 2 feet (0^m3 or 0^m6) high. 50

About half a mile eastward of Sūzeh, is a ruined tomb with a dome.

A shoal, on which, towards low water, the sea breaks in moderate weather, lies about 9 cables south-south-westward of the ruined tomb

Chart 753.

eastward of Sūzeh, but its position has not been accurately determined.

Masān (*Lat. 26° 44' N., Long. 56° 00' E.*) is a small village on the coast, with a date grove, situated about $4\frac{1}{2}$ miles south-westward of Sūzeh; inland of the village are some ruins and an old mosque. About one mile north-westward of the village is a remarkable isolated crag, 270 feet (82^m3) high, which shows up well from eastward.

10 Depths less than those shown on the chart were reported, in 1927, to exist about 2 miles southward of Masān.

Patrick Stewart bank is a detached patch, over which the least depth obtained is 14 fathoms (25^m6), lying about $8\frac{1}{2}$ miles south-south-eastward of Sūzeh, with greater depths close round it.

15 Tidal streams.—For tidal streams in the middle of the Strait of Hormuz south-eastward of Jazirat Henjām, see page 265.

Charts 3599, plan of Henjām sound, 753.

Jazirat Henjām.—This island lies off the middle of the south-eastern side of Qishm island with its north-eastern end about one mile south-westward of Ras Khārgu; its barren hills, which decrease in elevation from its northern to its comparatively low southern end, are covered with coarse grass and brushwood, and in colour the island is rather dark. (See view facing page 111).

Table hill, near the northern end of the island, rises to an elevation of 340 feet (103^m6); though remarkable on some bearings, it does not show up well when seen from southward against the higher land of Qishm island; on its summit is an inconspicuous whitewashed stone cairn, 7 feet (2^m1) in height. See view on chart 2837a.

30 Jabal Mushi, about 3 cables northward of Table hill and separated from it by a low valley stretching from east to west across the northern end of Jazirat Henjām, is 262 feet (79^m9) high and on its summit is a cairn, 10 feet (3^m0) in height.

Mitre hill, from which an irregular ridge extends in a south-easterly direction for nearly one mile, rises to an elevation of 344 feet (104^m8) about 7 cables south-eastward of Table hill. It has a double summit, the eastern being surmounted by a large and conspicuous cairn. On the north-eastern side of the ridge is a rocky plateau, 130 feet (39^m6) high, sloping in steep cliffs to the valley.

The village of Ghail (Khail) stands near some date groves on the western side, 3 miles south-westward of the northern extremity of the island, and a much larger village near the point at its southern end.

A Persian doctor is Quarantine officer at Henjām.

A small Persian garrison is maintained on the island.

Chart 3599, plan of Henjām sound.

45 Henjām sound.—Dangers.—Buoy.—Beacon.—Henjām sound is the strait between the north-eastern side of Jazirat Henjām and Qishm island.

Ras Khārgu (*Lat. 26° 41' N., Long. 55° 55' E.*), on the north-eastern side of the sound, is low and rocky, rising gently to an elevation of about 100 feet (30^m5) where it terminates, about one mile inland, in a cliff which drops to a sandy plain from which latter rise several plateaux. At a short distance eastward of the point is a whitewashed cairn, 18 feet (5^m5) high. See view on chart 2837a.

Rocky, uneven ground, with depths over it of less than 3 fathoms

Charts 2837a, 748b.

Chart 3599, plan of Henjam sound.

(5^m5), extends about 4½ cables southward from Ras Khārgu, and is marked at its outer edge by a red conical buoy.

Maundrell shoal, with a least depth of 3½ fathoms (5^m9), lies about one mile south-eastward of Ras Khārgu; it is connected to the shoal ground southward of the point by a ridge with depths of less than 6 fathoms (11^m0). Vessels should not pass between the shoal and the coast of Qishm island. 5

White point, on the south-western side of the sound, is situated about 1½ miles south-south-westward of Ras Khārgu; on it is a cairn 10 29 feet (8^m8) high. Between White point and Ras al Masheh (Mashia), a low and sandy point, and the northern extremity of Jazirat Henjām, the coast is bordered by sandy beaches separated by rocky points. Ras Giohdna, three-quarters of a mile north-north-westward of White point, is marked by a cairn. 15

A beacon, consisting of concrete blocks surmounted by a staff and triangle, painted white and 25 feet (7^m6) in height, stands near the extremity of Ras al Masheh (*Lat.* 26° 41' *N.*, *Long.* 55° 54' *E.*).

A wireless mast, 205 feet (62^m5) in height, with four secondary masts near it, stands about 3½ cables southward of the beacon. 20

The coastal bank, with depths of less than 3 fathoms (5^m5), extends half a mile offshore between White point and Ras Giohdna, thence to Ras al Masheh the edge of the bank is about 2 cables offshore.

A shoal spit extends nearly one cable northward from Ras al Masheh. A conspicuous stone hut stands on the coast about 4 cables north-westward of Ras Khārgu, and about 4 cables farther north-westward are the ruins of a similar hut. 25

For 1½ miles north-north-westward of Ras Khārgu the coast is rocky, thence it becomes low and sandy. Between Ras Khārgu and the conspicuous stone hut, depths of less than 3 fathoms (5^m5) lie within 30 3 cables of the coast.

Bevan patch, with a least depth of 2½ fathoms (4^m1), lies about half a mile off the northern shore about 1½ miles north-westward of Ras Khārgu. From its north-western end a ridge, with depths of from 3½ to 5½ fathoms (5^m9 to 10^m1), extends about 9 cables west-north-westward. 35

Mushi patch, with a least depth of 5½ fathoms (9^m6), lies about one mile north-westward of Ras al Masheh. A patch, with a least depth of 5½ fathoms (10^m1), lies about three-quarters of a mile west-north-westward of the same point. 40

Ras Buser, 8½ cables south-westward of Ras al Masheh, is marked by a cairn, 10 feet (3^m0) in height, and a similar cairn stands on the north-western slope of Jabal Mushi.

A rocky bank, over which the depths are less than 3 fathoms (5^m5), fringes the coast of Jazirat Henjām westward of Ras al Masheh; 45 between that point and Ras Buser it extends about 2 cables offshore, but southward of Ras Buser its outer edge lies from 5 to 6 cables from the coast. The outer edge of this bank is steep-to.

In the eastern approach to the strait, the channel between the shoals on either side has a least depth of 5½ fathoms (9^m6) over a width of 2½ cables, and a depth greater than 4 fathoms (7^m3) over a width of 4½ cables. 50

In the western approach the depths are from 5½ to 6 fathoms (9^m6 to 11^m0).

Charts 753, 2837a, 748b.

Chart 3599, plan of Henjām sound.

Light.—A light (*Lat. 26° 41' N., Long. 55° 53' E.*) is exhibited, at an elevation of 26 feet (7^m9), from a white iron column on a concrete base, about one cable southward of Ras al Masheh.

5 Anchorage.—**Directions.**—There is an anchorage north-eastward of Ras al Masheh; it is sheltered, but is not a desirable one on account of the hard bottom and the strong tidal streams and eddies there.

An anchorage, about 3 cables north-westward of Ras al Masheh, is partially sheltered from the shamāl which there blows from south-westward. The depths are irregular, over a bottom of sand and mud. The best position in which to anchor is in a depth of from 7 to 9 fathoms (12^m8 to 16^m6), with the beacon on Ras al Masheh bearing not less than 124°, distant about 3 cables.

A convenient berth is with the light structure on Ras al Masheh bearing 183°, distant 3½ cables. It is reported that in the hot weather, any cool wind there may be is felt and it is not laden with sand or dust. The position is open to a strong shamāl and slight sea but the holding ground is good; it cannot, however, be recommended during the winter months.

20 Vessels with a draught of more than 20 feet (6^m1), entering Henjām sound from south-eastward, should exercise great caution and should keep well southward of Maundrell shoal. It is recommended to enter with the western edge of a conspicuous clump of trees close northward of the conspicuous stone hut, north-westward of Ras Khārgu, bearing 340°, but care must be taken to alter course westward in good time to avoid the foul ground marked by the buoy southward of that point. During a shamāl it is better to approach the anchorage by the eastern, rather than the western entrance.

Prohibited anchorages.—Anchorage is prohibited south-eastward of the pecked line indicated on the chart, joining a white stone hut, situated about half a mile south-eastward of Ras al Masheh, and the conspicuous stone hut north-westward of Ras Khārgu.

Anchorage is prohibited south-westward of the pecked line, indicated on the chart extending west-north-westward from Ras al Masheh.

35 Tidal streams.—Eastward of Ras al Masheh, the tidal streams set north-westward and south-eastward; and at times attain a rate of nearly 2½ knots; *see table, page 265.*

Port facilities.—**Communications.**—A pier, with a depth of 3 feet (0^m9) alongside the steps, extends north-eastward from a position close south-eastward of Ras al Masheh; at the root of the pier there is a large brick storehouse. Landing can also be effected on the western side of Ras al Masheh, where the beach is moderately steep.

Turtle can be obtained from the local fishermen. Beef, and a very limited quantity of mutton may be obtained, but 24 hours' notice must be given. Sea fishing and seining is good, and oysters can be taken from the rocks at low water.

Customs regulations are strictly enforced by the Persian authorities and duty is levied on every article landed.

50 Henjām is connected to the general telegraph system.

Charts 3599, plan of Henjām sound, 753.

Coast.—Danger.—**Anchorage.**—Dairistān bay is entered between Ras Khārgu (*Lat. 26° 41' N., Long. 55° 55' E.*) and Ras Sālakh (Salagh), about 9½ miles westward; the shore is low and sandy.

Chart 753.

Dairistān is a small village about $1\frac{1}{2}$ miles inland and 4 miles north-north-westward of Ras Khārgū.

Quoin hill, about $2\frac{1}{2}$ miles inland of the northern shore of Dairistān bay, is 344 feet (104^m8) high, long and conspicuous; between it and the hills northward of Dairistān is an extensive swampy plain, northward of which is Jabal Biscoe, *see* page 111. 5

Ras Sālakh is a sandy point, but it has a rocky beach; it may be approached to a distance of about half a mile; the hills lie about 2 miles northward of the point. About $2\frac{1}{2}$ miles westward of Ras Sālakh is a large village of the same name. Ras Tarkūn lies about $7\frac{1}{2}$ miles west-south-westward of Ras Sālakh, the coast between being low and sandy, but within, the land rises gradually to cliffs which face northward and descend to a plain, beyond which the hills rise in broken and precipitous sides; about 2 miles northward of Sālakh 10 15 they form a plateau, westward of which they become confused, and rise in varied and fantastic shapes.

A rock, over which there is a depth of only one foot (0^m3), lies about $1\frac{1}{2}$ miles east-south-eastward of Ras Tarkūn near the edge of a bank which there fringes the coast. 20

A black chimney, 80 feet (24^m4) high, rises from the buildings of the Anglo-Persian Oil Company about $2\frac{1}{2}$ cables eastward of Ras Tarkūn; it is conspicuous, except from eastward when it is difficult to distinguish it from the dark hills behind it. There are two small, but conspicuous, trees about one mile north-eastward of the chimney. 25

Anchorage may be obtained off Ras Tarkūn, in a depth of 4 fathoms (7^m3), three-quarters of a mile offshore; it should be approached with the chimney bearing 013° in order to avoid the rock off that point. Landing is bad, for a ridge of sand, which nearly dries, runs parallel with, and about one cable off, the beach. The best place is 30 reported to be a short distance westward of the path leading to the oil company's main building. There is a jetty, opposite the tall chimney, but it appears to dry about 6 feet (1^m8).

Chart 3791, plan of Basidu and its approaches.

Kish kūh, a hill with a small table-top, is noticeable and rises to 35 an elevation of 1,331 feet (405^m7) about 4 miles west-north-westward of Ras Tarkūn. (*See* view on chart 2837a). A range of dark red hills, largely composed of salt, with patches of slate colour, crosses the island from north to south about 3 miles westward of Kish kūh. There are extensive salt caves at the southern end of this range, from 40 which brine exudes on to the plain between them and the sea and where, on evaporation, it leaves a large deposit of salt. About three-quarters of a mile north-westward of the point near the southern end of these hills, and about $7\frac{1}{2}$ miles west-south-westward of Ras Tarkūn, 45 is a small stone hut which, though not conspicuous, has been found to be useful for fixing the position of the vessel when approaching the inshore passage round the western end of Qishm island; there are some fishing stakes close southward of the hut.

Kawuni (*Lat.* 26° 35' N., *Long.* 55° 25' E.), situated about one mile inland, is a small village near a few date trees about $3\frac{1}{2}$ miles westward 50 of the salt caves, the intervening coast being hilly. About one mile north-north-westward of the village is a table-topped hill, 550 feet (167^m6) high; westward of the village, a plain extends to Ras Dastakān, a low and rocky point about $7\frac{1}{2}$ miles west-south-westward of Kawuni,

Chart 3791, plan of Basidu and its approaches.

between the hills and the coast. A conspicuous islet, about 10 feet (3^m0) high, lies close south-westward of Ras Kakūn, about $3\frac{1}{2}$ miles east-north-eastward of Ras Dastakān; between the islet and Ras Dastakān are two shallow bays separated by a point, close off the south-western extremity of which lies a flat rock, which dries about 5 feet (1^m5) and shows up well. About 6 cables north-westward of this rock is another rock, lying close offshore.

The Hummocks, nearly 3 miles north-north-eastward of Ras

10 Dastakān, are three remarkable hills; the western Hummock is table-topped; the middle one has a rounded summit; and the eastern and highest is 577 feet (175^m9) high and table-topped; the southern sides of The Hummocks are precipitous and the eastern one is almost joined to a table-land the southern side of which is also precipitous; *16* this table-land extends in an east-north-easterly and opposite direction for about 4 miles, ending eastward in a bluff. *See* views facing this page and on chart 2837a.

Except in the vicinity of The Hummocks, where the land rises to some broken rocky hills, the western coast of Qishm island is low.

20 (*See* view facing this page). About $7\frac{1}{2}$ miles north-north-westward of Ras Dastakān is Bāsidū point; between this point and a position about 5 miles southward of it, the coast is fringed by a flat of mud and sand, which extends as much as about 2 miles offshore. An over-hanging cliff, resembling a shark's jaw, is situated about a mile north-

26 north-westward of Ras Dastakān.

ISLANDS AND DANGERS SOUTH-WESTWARD OF QISHM ISLAND.—The Flat, over which there are depths of from 12 to 18 feet (3^m7 to 5^m5), lies off the south-western end of Qishm island, its outer edge lying about 9 miles off the southern coast of the island

30 and about $5\frac{1}{2}$ miles off the western coast. Discoloured water, at times almost dark brown, extends for some distance outside The Flat.

There is a narrow navigable channel between The Flat and the southern and western coasts of Qishm island. *See* page 127.

35 Mariner shoal, with a least depth of 24 feet (7^m3), lies about 12 miles south-south-westward of Ras Dastakān; as the depths are irregular, this locality should be avoided.

Chart 3452, plan of Jazirat Tunb.

Jazirat Tunb.—**Light.**—**Dangers.**—This island, 175 feet (53^m3) high, brown in colour, and level in outline, lies $15\frac{1}{2}$ miles southward

40 of Ras Dastakān; near its north-eastern extremity is a small peaked hummock, which is conspicuous from north-eastward and south-westward. *See* views on chart 2837a and facing page 117.

A light (*Lat. 26° 16' N., Long. 55° 18' E.*) is exhibited, at an elevation of 233 feet (71^m0), from a white iron framework structure, 71 feet

45 (21^m6) in height, on the summit of Jazirat Tunb.

Except at the northern and southern ends, where there are sandy beaches, the eastern side of the island consists of a low rocky cliff. The south-eastern extremity of the island is fringed by a sandy spit, almost steep-to, on the northern side of which is a bight with depths

50 of from 3 to 4 fathoms (5^m5 to 7^m3) about 2 cables offshore.

Foul ground extends for a short distance from the south-western part of the island.

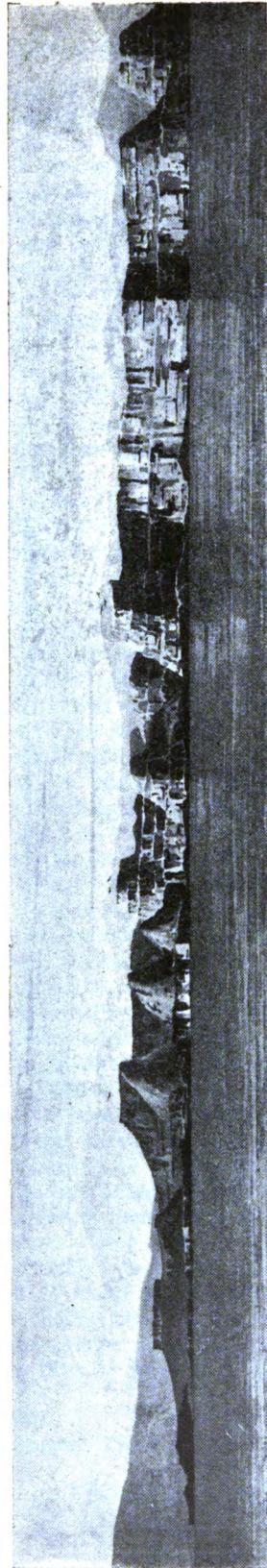
On the southern side of the island, at a short distance inland, there



Ras Dastakān,
bearing 350°,
9 miles.

Qishm island.

South-western end of Qishm island.
(Original dated prior to 1916.)

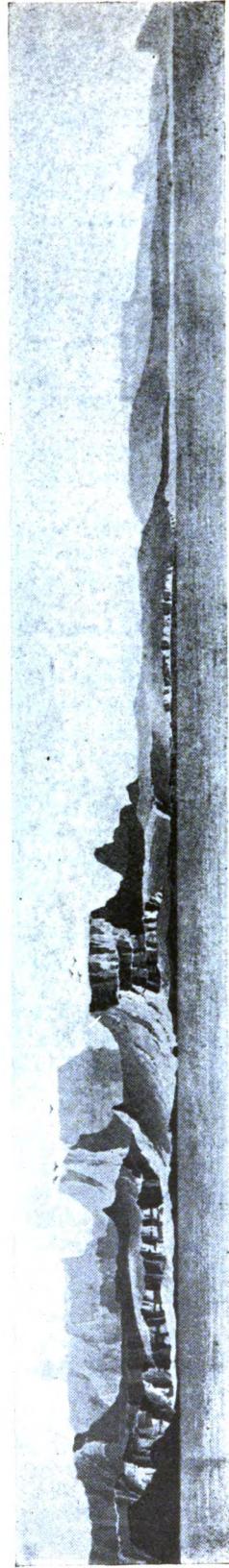


Western hummock.

The Hummocks at south-western end of Qishm island from south-south-westward.
(Original dated 1822.)

Centre hummock.

Highest hummock.
The Highest hummock.
(Original dated 1822.)



Highest hummock.
Centre hummock.

The Hummocks at south-western end of Qishm island from westward.
(Original dated 1822.)

Chart 3791, plan of Basidu and its approaches.

between the hills and the coast. A conspicuous islet, about 10 feet (3^m0) high, lies close south-westward of Ras Kakūn, about $3\frac{1}{2}$ miles east-north-eastward of Ras Dastakān; between the islet and Ras Dastakān are two shallow bays separated by a point, close off the south-western extremity of which lies a flat rock, which dries about 5 feet (1^m5) and shows up well. About 6 cables north-westward of this rock is another rock, lying close offshore.

The Hummocks, nearly 3 miles north-north-eastward of Ras Dastakān, are three remarkable hills; the western Hummock is table-topped; the middle one has a rounded summit; and the eastern and highest is 577 feet (175^m9) high and table-topped; the southern sides of The Hummocks are precipitous and the eastern one is almost joined to a table-land the southern side of which is also precipitous; this table-land extends in an east-north-easterly and opposite direction for about 4 miles, ending eastward in a bluff. See views facing this page and on chart 2837a.

Except in the vicinity of The Hummocks, where the land rises to some broken rocky hills, the western coast of Qishm island is low. (See view facing this page). About $7\frac{1}{2}$ miles north-north-westward of Ras Dastakān is Bāsidū point; between this point and a position about 5 miles southward of it, the coast is fringed by a flat of mud and sand, which extends as much as about 2 miles offshore. An over-hanging cliff, resembling a shark's jaw, is situated about a mile north-north-westward of Ras Dastakān.

ISLANDS AND DANGERS SOUTH-WESTWARD OF QISHM ISLAND.—The Flat, over which there are depths of from 12 to 18 feet (3^m7 to 5^m5), lies off the south-western end of Qishm island, its outer edge lying about 9 miles off the southern coast of the island and about $5\frac{1}{2}$ miles off the western coast. Discoloured water, at times almost dark brown, extends for some distance outside The Flat.

There is a narrow navigable channel between The Flat and the southern and western coasts of Qishm island. See page 127.

Mariner shoal, with a least depth of 24 feet (7^m3), lies about 12 miles south-south-westward of Ras Dastakān; as the depths are irregular, this locality should be avoided.

Chart 3452, plan of Jazirat Tunb.

Jazirat Tunb.—Light.—Dangers.—This island, 175 feet (53^m3) high, brown in colour, and level in outline, lies $15\frac{1}{2}$ miles southward of Ras Dastakān; near its north-eastern extremity is a small peaked hummock, which is conspicuous from north-eastward and south-westward. See views on chart 2837a and facing page 117.

A light (*Lat. 26° 16' N., Long. 55° 18' E.*) is exhibited, at an elevation of 233 feet (71^m0), from a white iron framework structure, 71 feet (21^m6) in height, on the summit of Jazirat Tunb.

Except at the northern and southern ends, where there are sandy beaches, the eastern side of the island consists of a low rocky cliff. The south-eastern extremity of the island is fringed by a sandy spit, almost steep-to, on the northern side of which is a bight with depths of from 3 to 4 fathoms (5^m5 to 7^m3) about 2 cables offshore.

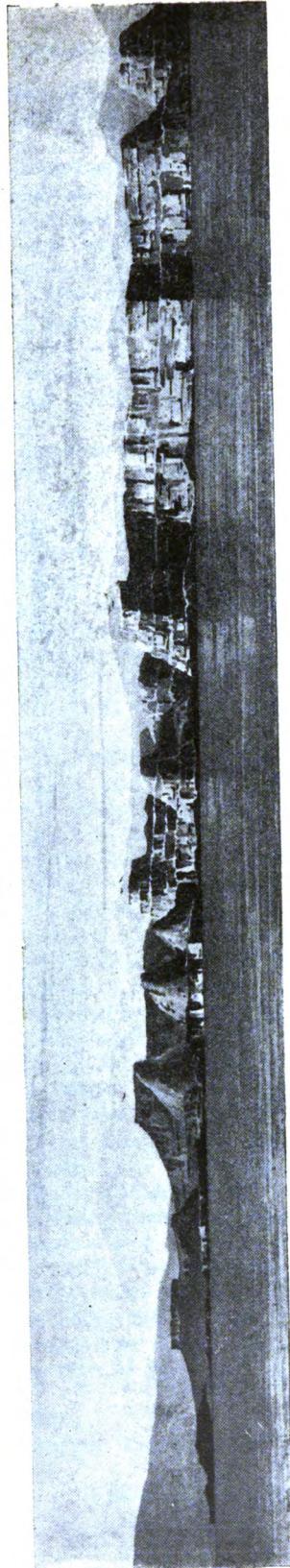
Foul ground extends for a short distance from the south-western part of the island.

On the southern side of the island, at a short distance inland, there



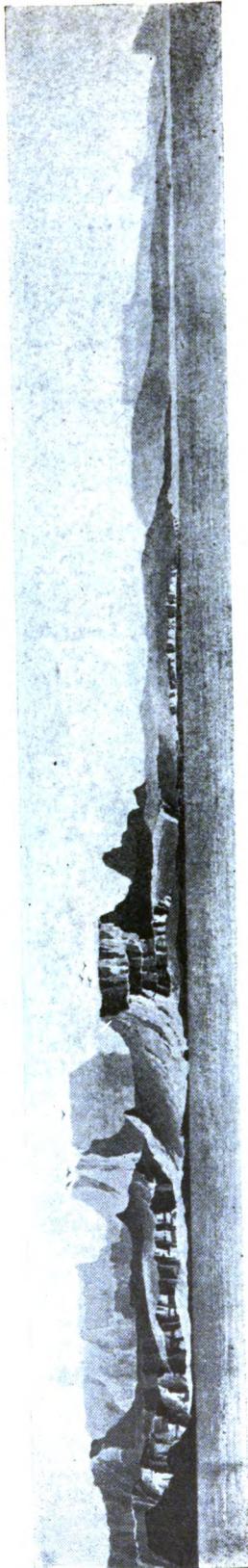
Ras Dastakān,
bearing 35°0',
9 miles.

Qishm island.
South-western end of Qishm island.
(Original dated prior to 1915.)



Centre hummock.

Western hummock.
The Hummocks at south-western end of Qishm island from south-south-westward.
(Original dated 1822.)



Highest hummock.

Centre hummock.
Highest hummock.
The Hummocks at south-western end of Qishm island from south-south-westward.
(Original dated 1822.)

Highest hummock. Western hummock.
Centre hummock.

The Hummocks at south-western end of Qishm island from westward.
(Original dated 1822.)



Lighthouse,
bearing 230°,
 $11\frac{1}{4}$ miles.



Lighthouse,
bearing 115°,
11 miles.

Two views of Jazirat Tumb.

(Originals dated 1930.)



Summit,
bearing 109°,
 $6\frac{1}{4}$ miles.

Jazirat Nabiyu Tumb from north-north-westward.

(Original dated 1930.)

Chart 3452, plan of Jazirat Tunb.

is a hamlet, consisting of a few well-built houses, near which is a flagstaff.

The island is covered with coarse grass and shrubs, and on it are many small and very poisonous snakes; a considerable number of goats and some cattle are kept; fine oysters may be obtained. 5

Clive rock, one foot (0^m3) high, and steep-to, lies about 4 cables west-north-westward of the south-western extremity of Jazirat Tunb. A rock, which dries 2 feet (0^m6), lies about 2 cables southward of Clive rock, and between them is a rock, with a depth of 5 feet (1^m5) 10 over it. Ormonde rock, over which there is a depth of 7 feet (2^m1) and steep-to, lies about $4\frac{1}{2}$ cables west-south-westward of Clive rock; and another rock, with a depth of 10 feet (3^m0), lies about 3 cables north-westward of Clive rock.

Off-lying dangers and banks.—Coote rock, with a least depth 15 of 27 feet (8^m2), lies about 5 miles eastward of the north-eastern extremity of Jazirat Tunb.

A heavy tide-rip often occurs over a 19-fathom (34^m7) bank (chart 753), about 3 miles northward of the light structure on Jazirat Tunb; and also over a 12-fathom (21^m9) bank about $3\frac{1}{2}$ miles west- 20 north-westward of the light structure.

Two rocky patches, over which the depths are, respectively, 45 and 41 feet (13^m7 and 12^m3), lie about 3 miles southward and 4 miles south-south-eastward of Jazirat Tunb. The depths between these patches and the island are very irregular, and cause overfalls. 25

Anchorages.—The best anchorage at Jazirat Tunb for a steam vessel is in a depth of from $7\frac{1}{2}$ to 10 fathoms (13^m7 to 18^m3) off the eastern side of the island. In this position the vessel is sheltered from the shamāl, though exposed to the nashi, but the tidal streams are not so strong as they are southward of the island. In 1931, 30 H.M.S. *Penzance* anchored, in a depth of 4 fathoms (7^m3), rock, with a conspicuous white hut on the south-eastern point of the island bearing 236° , distant $4\frac{1}{2}$ cables.

Anchorage may be obtained off the southern side of the island, in a depth of 6 or 7 fathoms (11^m0 or 12^m8), but the tidal streams run 35 strongly eastward and westward.

During strong south-easterly winds, sheltered anchorage may be obtained north-westward of the island, in a depth of from 7 to 8 fathoms (12^m8 to 14^m6), about $4\frac{1}{2}$ cables offshore, with the light structure bearing 097° . When approaching this anchorage, due allowance 40 must be made for the tidal stream.

The best landing, except when the nashi is blowing, is on the beach in the bay northward of the south-eastern extremity of the island. Landing can also be effected at the village on the southern side of the island, or on a sandy beach on its north-western side. 45

Tidal streams.—For tidal streams in the vicinity of Jazirat Tunb (see page 265); overfalls have been observed about 3 miles southward and $2\frac{1}{2}$ miles north-westward of the island, those in the former position being the stronger.

The tidal streams over Coote rock (*Lat. $26^\circ 17' N.$, Long. $55^\circ 24' E.$*), 50 which attain a rate of from 2 to 3 knots at springs, cause strong tide-rips.

Charts 753, 2830.

Jazirat Nābiyu Tunb.—This island, situated about 7 miles

Charts 753, 2830, 2837a, 748b.

Charts 753, 2830

westward of Jazirat Tunb, has a dark hill on its north-western point, with two small peaks, 117 feet (35^m7) high; it is barren and uninhabited. See views on chart 2837a, and facing page 117.

8 The island is steep-to except on its north-eastern side, where a reef extends about 2 cables offshore, and on its southern side, where a reef, which dries, extends about half a cable offshore.

In 1935, H.M.S. *Bideford* anchored in a depth of $4\frac{1}{2}$ fathoms (8^m7), sand, about a quarter of a mile from the eastern side of the island.

10 Landing was effected on a sandy beach abreast this position.

Chart 3452, plan of Jazirat Bu Musa.

Jazirat Bu Musa.—Dangers.—Anchorages.—This island, situated 25 miles south-south-westward of Jazirat Tunb, is mostly low, but there are numerous hummocks, some of which, being of iron oxide, are dark chocolate in colour, and a ridge on the western side of the island attains an elevation of 234 feet (71^m3). Jabal Halwa, a conspicuous hill of light pinkish colour, rises abruptly near the northern end of the island to an elevation of 362 feet (110^m3). See views facing this page and on chart 2837a.

20 The northern point of the island rises to a conspicuous hill with two summits, 153 feet (46^m6) high, and bright red in colour.

Two rocks, on which the sea breaks in moderate weather, lie near the outer edge of a bank with a depth of less than 3 fathoms (5^m5), which extends about 4 cables from the northern part of the eastern side of the island. There is a depth of 9 feet (2^m7), about one cable outside the northern rock.

In the north-eastern part of the island, near a small date grove, are the ruins of a large house.

There are three bights on the southern side of the island separated by two rocky points. A flat, parts of which dry from 2 to 5 feet (0^m6 to 1^m5), extends about three-quarters of a mile from the shore of the eastern bight; and a flat, part of which dries 2 feet (0^m6), extends about 4 cables from the shore of the middle bight; there is a patch, which dries 2 feet (0^m6) and is steep-to, lying about $1\frac{1}{2}$ cables outside this flat and 7 cables westward of the point separating the eastern and middle bights.

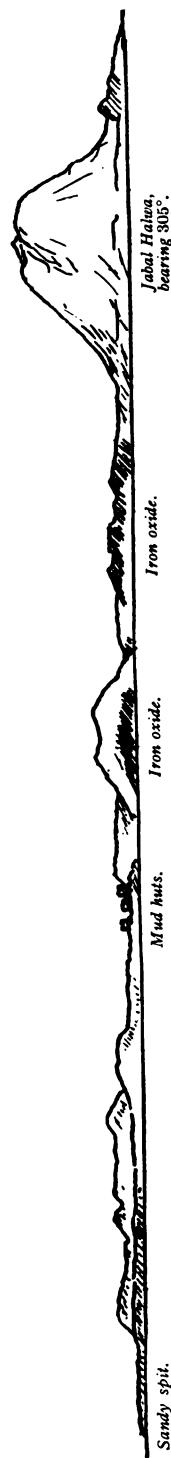
The point separating the middle and western bights terminates in a conspicuous black rock, near which is a village with a flagstaff. Landing can be effected here. A sunken rock lies about $3\frac{1}{2}$ cables north-westward of the extremity of this point, and a rocky shoal, with a least depth of 12 feet (3^m7), lies about 4 cables westward of the point. In 1933, H.M.S. *Lupin* reported that there was a depth of 6 feet (1^m8) over this shoal (*Lat. 25° 52' N., Long. 55° 01' E.*).

The flagstaff, bearing 110° , just open of a low dark-coloured mound westward of it leads northward of the rocky shoal.

A sunken rock lies about $3\frac{1}{2}$ cables westward of the western extremity of the island, and between them are three islets, the highest of which has an elevation of 50 feet (15^m2) and is connected to the point at low water. This point is the termination of the range of hills on the western side of the island.

The north-western coast is rocky and should not be approached within one mile. At the south-western end of this coast, is a sandy bay about $2\frac{1}{2}$ cables off which lie two islets with a rock, awash, between them.

Charts 753, 2830, 2837a, 748b.



Jazirat Bü Musā from south-eastward.

(Original dated 1928.)

Chart 3452, plan of Jezirat Bu Musa.

Torlesse rock (*Lat. 25° 54' N., Long. 55° 01' E.*), over which there is a depth of 8 feet (2^m4), lies about 1½ miles westward of the northern extremity of the island; there are depths of 6 and 7 fathoms (11^m0 and 12^m8) close to the rock, on which latter the sea breaks heavily in rough weather.

There is a large quantity of iron oxide on the island.

Anchorage sheltered from the shamāl, may be obtained, in a depth of 7 fathoms (12^m8), sand, near the southern end of the eastern coast of Jazirat Bū Mūsa. In 1931, H.M.S. *Penzance* anchored, in a depth of 7 fathoms (12^m8) mud, with some mud huts on the beach near the south-eastern extremity of the island bearing 280°, distant about 3½ cables.

Good anchorage, sheltered from the kaus, may be obtained, in a depth of 6 fathoms (11^m0), about 4 cables southward of the western extremity of the island.

When the nashi has been blowing hard for a few days a strong southerly set is to be expected at this anchorage.

Tidal streams.—The tidal streams set south-westward and north-eastward at a rate of about one knot at springs.

20

Chart 753.

CLARENCE STRAIT.—This strait, which separates the island of Qishm from the coast of Persia, is contracted near its centre to a width of about 1½ miles between Puhal point, on the mainland, about 31 miles south-westward of Bandar 'Abbās, and a point on the island southward of it. South-westward of this point the channel is divided by a large island, that part of it north-westward of the island being known as Khōr Masakeh, and that part south-eastward of it being Khōr Gūrān.

From the junction of these two portions, at the south-western end of the island, to the south-western extremity of Qishm island the channel is known as Khōr Ja'afari (Jafuri).

Clarence strait is navigable by vessels of moderate size from its eastern entrance as far as Lāft point, situated about 2 miles south-south-westward of Puhal point, and vessels of shallower draught can proceed right through it; but the channel is not buoyed, the tidal streams are strong and, westward of Lāft point, the channels have not been thoroughly surveyed. The passage should not be attempted without local knowledge.

The least depth in the fairway eastward of Lāft point (*Lat. 26° 56' N., Long. 55° 44' E.*) appears to be about 5½ fathoms (9^m6) and that westward of it, 3½ fathoms (6^m4), which latter depth is found in the western entrance of the strait.

Pilots.—Pilots can be obtained at Qishm town.

Chart 753, 2837a.

45

Aspect.—On the mainland side of Clarence strait is the great chain of mountains which ends eastward in Kūh-i-Gināu (page 105). A mountain, 5,120 feet (1560^m6) high, with two great steps or notches on its western side, lies about 18 miles west-south-westward of Kūh-i-Gināu. Kūh-i-Hormuz, about 36 miles west-north-westward of this latter, is a peak, 9,200 feet (2804^m2) high, which is visible over other mountains seaward of it; from southward its summit appears as three small peaks covered, in winter, with snow. Khūn Surkh range,

Charts 753, 2830, 2837a, 748b.

Charts 753, 2837a.

between this lofty range and the sea, rises gradually from westward to an elevation of about 1,500 feet ($457^{\text{m}}2$), and extends in a north-easterly direction from a position about 17 miles westward of Bandar 5 'Abbās.

Chart 753.

Kūh-i-Namak Sar range is a confused mass of irregular and precipitous peaks, the highest of which attains an elevation of 1,235 feet ($376^{\text{m}}4$), situated about 2 miles southward of the south-western end 10 of Khūn Surkh range. Kūh-i-Puhal-i-Khamir, about 3,700 feet ($1127^{\text{m}}8$) high, is a pointed summit, about $6\frac{1}{2}$ miles north-westward of Puhal point, near the eastern end of a mountain range, which extends westward for nearly 50 miles; West peak, in the same range and about 13 miles westward, is reported to be much higher, but is not 15 conspicuous, and a spur of the range extends south-eastward from it. Between this range and the great range northward of it is a wide valley.

A third range commences northward of the south-western extremity of Qishm island and extends in a westerly direction for a considerable distance (see page 122). There is a wide valley between this and the 20 Kūh-i-Khamir range through which flows the Rūd-i-Mehrān.

On the Qishm island side of Clarence strait, the most remarkable hills are situated southward of Biscoe bay, see page 111.

From Finger peak a range trends northward to within $1\frac{1}{2}$ miles of the coast where it turns westward and, extending in that direction for 25 about 6 miles, forms a coastal range of low irregular hills with no conspicuous summit, except Sugar-loaf hill, 350 feet ($106^{\text{m}}7$) high, near its western end. Paipusht, a village on the slopes of the eastern hill of the coastal range, shows up well when the sun is shining on it.

Jabal Arab is a detached hill, 185 feet ($56^{\text{m}}4$) high, situated near 30 the coast, about $1\frac{1}{2}$ miles northward of Sugar-loaf hill, and about $2\frac{1}{2}$ miles south-eastward of A'la Mulk point. Shaikh Musa is a detached hill, 270 feet ($82^{\text{m}}3$) high, situated about $1\frac{1}{2}$ miles southward of A'la Mulk point; its southern side is perpendicular and forms a useful mark for vessels approaching from eastward. Meherhuni hill, 585 feet 35 ($178^{\text{m}}3$) high, lies about $2\frac{1}{2}$ miles southward of A'la Mulk point and is also conspicuous from eastward.

Eastern end of Clarence strait.—Coasts.—Dangers.—On the southern side of the strait the land rises from a point to a table-topped hill, about 100 feet ($30^{\text{m}}5$) high, about 4 miles north-westward of 40 Qishm town (page 108). About 6 miles westward of this hill is Jabal Horton, close northward of which is a low point. Between these two points there are several bights, filled by mud banks, which dry, extending about 2 miles offshore, with depths of 6 feet ($1^{\text{m}}8$) extending about half a mile farther, where small craft may obtain anchorage when the 45 nashi is blowing.

Khōr Taola, in which native boats are hauled up, runs in behind a long low point, at the south-eastern end of the mud bank, which extends westward from the point from which the 100-foot ($30^{\text{m}}5$) hill rises. Dukuhak islets (Lat. $27^{\circ} 00' N.$, Long. $56^{\circ} 12' E.$), 80 and 50 100 feet ($24^{\text{m}}4$ and $30^{\text{m}}5$) high, respectively, lie on the mudbank off the entrance of Khōr Taola. Milne head, a bold promontory 225 feet ($68^{\text{m}}6$) high, projects on to the mud bank about $1\frac{1}{2}$ miles westward of the Dukuhak islets. Jabal Salsul, a peaked precipitous hill, rises about three-quarters of a mile south-south-eastward of Milne head.

Charts 2837a, 748b.

Chart 753.

Jabal Horton is a remarkable wedge-shaped hill, the bluff being on its southern side ; it is 454 feet (138^m4) high and on its summit is a small tree.

About 6 miles westward of Sūru (page 110) is Birkeh Band-i-'Ali, a conspicuous dome-shaped reservoir. Sūru spit, a bank of hard sand which dries, extends about 1½ miles offshore between them, and on its outer edge is Sūru islet, 8 feet (2^m4) high. About 1½ miles southward of the spit is the eastern end of another spit, with depths of from 4½ to 4¾ fathoms (7^m8 to 8^m7), which extends from the shore westward 10 with less depths.

Between Birkeh Band-i-'Ali and Bustāneh point, about 12 miles south-westward, a bank of dead coral, covered with sand and mud, dries for about 7 cables offshore, and as far southward as Bustāneh village, situated about 8 miles south-westward of Birkeh Band-i-'Ali, 15 is fairly steep-to ; but, in the bight between that village and Bustāneh point, a flat, over which there are depths of less than 3 fathoms (5^m5), extends about one mile outside the bank.

Bustāneh point is low and not easily identified though, on its eastern extremity, there is a hillock about 20 feet (6^m1) high.

20

Bustāneh East and West banks form practically one continuous bank lying parallel with, and about 2½ miles off the northern shore, its north-eastern end lying about 6 miles eastward of Bustāneh village. A patch on the East bank is sometimes awash, and one on the West bank dries 4 feet (1^m2). The banks are moderately steep-to on their southern sides. 25 The channel north-westward of the banks, between them and the shoal extending from the mainland, is about 1½ miles wide at its north-eastern end and three-quarters of a mile wide at its south-western end, with depths of from 4½ to 8 fathoms (7^m8 to 14^m6).

Between the point close northward of Jabal Horton and Kuwāi 30 point, 6½ miles west-south-westward, the southern shore is indented by several bights filled by mud flats, which dry. Dargawān is a small village with a few date trees near it, situated about 1½ miles south-westward of Jabal Horton.

A small detached bank of sand and rock, over which there is a least 35 depth of 1½ fathoms (2^m7), lies from 6 to 8 cables offshore northward of Dargawān.

Kuwāi village, in which there is a date grove, stands about 3½ miles west-south-westward of Dargawān ; near the beach is a water-tank and a ruined mosque. Kuwāi point (*Lat.* 26° 57' N., *Long.* 56° 00' E.) 40 is steep-to and well defined and on it is a hillock, 50 feet (15^m2) high ; immediately inland of the point is Kuwāi plateau, 270 feet (82^m3) high.

A small detached shoal, over which there is a least depth of 4½ fathoms (8^m2), hard sand, lies about 2 miles north-eastward of Kuwāi point, and is the principal fishing ground in the strait.

45

Zainubi great table-land is from 300 to 500 feet (91^m4 to 152^m4) high and extends parallel with the coast for about 3 miles west-south-westward of a position about 1½ miles south-eastward of Kuwāi village ; it is highest at its eastern end and there is a gap near its western end. Zainubi point, about 1½ miles south-westward of Kuwāi point, is at 50 the north-eastern end of a plateau 180 feet (54^m9) high. On the point is the small village of Murghara. Zainubi village stands in a thick date grove about one mile inland.

Biscoe bay is entered between Zainubi point and A'la Mulk point,

Charts 2837a, 748b.

Chart 753.

about 10 miles westward. About 5 miles southward of the shore of the bay are Jabal Biscoe and Finger peak (see page 111), which form useful landmarks. A bank, which dries, fringes the shore of the bay and extends from a quarter to half a mile offshore.

A'la Mulk point lies at the eastern end of a rocky plateau which rises to an elevation of 110 feet (33^m5) ; the village of the same name, near which are a few trees, lies close southward of the plateau ; in the village is a small fort.

10 Between Bustāneh point and Puhal point, about $1\frac{1}{2}$ miles west-south-westward, the northern shore is low and the high water line is not easily defined as the sea overflows it at spring tides. It appears to be fronted by a flat which dries, and of considerable extent, southward of the middle of which a flat, with depths less than 3 fathoms (5^m5) over it, extends to within a short distance of Middle banks (see below). On Puhal point are some ruined water-tanks and about $2\frac{1}{2}$ cables north-eastward of the point is a conspicuous tree. The mouth of the Rūd-i-Kul, the water of which is extremely salt, is situated about 2 miles north-eastward of Puhal point ; the river is 20 navigable by native craft only. Puhal village, about 2 miles northward of the point, consists of a number of scattered groups of houses extending in an easterly and westerly direction across the plain.

Middle banks consist of two shoals, about $1\frac{1}{2}$ miles apart, between which are depths of from 3 to 5 fathoms (5^m5 to 9^m1). They extend 25 from a position about $1\frac{1}{2}$ miles northward of Zainubi point to a position about 2 miles eastward of A'la Mulk point. The eastern bank is of rock and sand, and the least depth over it, near its centre, is one foot (0^m3) ; the western bank dries over a considerable area and is steep-to on its south-western side. The channel southward of Middle 30 banks is from half a mile to one mile wide with depths in it of from 6 to 10 fathoms (11^m0 to 18^m3). There is a channel northward of the banks, but it is intricate and should not be attempted ; at its western end there is a $2\frac{1}{2}$ -fathom (5^m0) patch in mid-channel. The east-going tidal stream is reported to set strongly towards these banks.

35 A rocky bank, with depths over it of from one foot to 3 fathoms (0^m3 to 5^m5), lies on the southern side of the fairway nearly parallel with the shore of Biscoe bay, and extends from a position about 3 miles west-south-westward of Zainubi point (*Lat. $26^{\circ} 56' N.$, Long. $55^{\circ} 58' E.$*) to within about half a mile south-eastward of A'la 40 Mulk point ; between this bank and the shore bank, there is a very narrow channel, but it is only suitable for native craft.

A'la Mulk reef, which dries from 3 to 4 feet (0^m9 to 1^m2), lies near the western end of the foregoing rocky bank ; and about 2 cables northward of the western end of the reef there is a detached shoal, 45 over which there is a depth of $2\frac{1}{2}$ fathoms (4^m6).

A'la shoal consists of some rocky patches, with a least depth of $3\frac{1}{2}$ fathoms (5^m9), lying from about three-quarters of a mile to $1\frac{1}{2}$ miles north-westward of A'la Mulk point.

Puhal patch, over which there is a depth of $3\frac{1}{2}$ fathoms (6^m9), rock, 50 lies about $6\frac{1}{2}$ cables east-south-eastward of Puhal point.

About $1\frac{1}{2}$ miles westward of A'la Mulk point is Lāft Qadim, a small rocky point, eastward of which, near the beach, there is a water-tank, 2 cables southward of which is a small mosque ; both are fairly conspicuous. About $1\frac{1}{2}$ miles south-westward of Lāft Qadim point

Chart 753.

is a rocky plateau, 62 feet ($18^{\text{m}9}$) high, and about 6 cables farther in the same direction is Läft point. Between Läft Qadim point and the rocky plateau are the villages of Kahura and Geshira.

Ked shoal, with a least depth of $2\frac{1}{2}$ fathoms ($4^{\text{m}6}$), rock and sand, lies about three-quarters of a mile north-north-eastward of Läft point. 5

Close within Läft point there is a small hill, which is a useful mark when approaching the anchorage off the point. There are depths of 2 fathoms ($3^{\text{m}7}$) and less about 3 cables northward and $1\frac{1}{2}$ cables westward of the point, southward of which latter position these depths will be found $4\frac{1}{2}$ cables offshore. Between one and 5 cables west-north-westward of the point the depths are irregular, varying from $3\frac{1}{2}$ to 5 fathoms ($6^{\text{m}4}$ to $9^{\text{m}1}$), sand and rock. 10

Low point lies about $1\frac{1}{2}$ miles west-south-westward of Läft point; from it a spit extends about $1\frac{1}{2}$ miles north-north-eastward; the inner part of the spit dries and over its outer end there is a depth of $3\frac{1}{2}$ fathoms ($6^{\text{m}4}$). 15

Anchorages.—Directions.—A well-sheltered anchorage, with good holding ground, in depths of from $4\frac{1}{2}$ to 7 fathoms ($8^{\text{m}2}$ to $12^{\text{m}8}$), may be obtained between Bustāneh village and Bustāneh East bank; but in the eastern approach to it there are depths of from $3\frac{1}{2}$ to $4\frac{1}{2}$ fathoms ($6^{\text{m}4}$ to $8^{\text{m}2}$). 20

A completely sheltered anchorage may be obtained by vessels with local knowledge off Puhal point, in a depth of 5 fathoms ($9^{\text{m}1}$) close offshore, but the tidal streams there are reported to attain a rate of $2\frac{1}{2}$ knots, and the holding ground is bad. 25

A well protected anchorage may be obtained by vessels with local knowledge $3\frac{1}{2}$ cables north-westward of Läft point, in a depth of 6 fathoms ($11^{\text{m}0}$), or in 4 fathoms ($7^{\text{m}3}$) at a distance of 2 cables from it. At this anchorage, the tidal streams attain a rate of 2 knots at springs, the stream running westward with the rising tide and north-eastward with the falling tide. 30

A vessel approaching Clarence strait from south-eastward, and having rounded the eastern end of Qishm island at a distance of not less than 2 miles (see page 110), should take care to avoid the shoal extending northward from Milne head (*Lat. $27^{\circ} 00' N.$, Long. $56^{\circ} 10' E.$*). She should then steer to pass about $3\frac{1}{2}$ cables northward of Kuwái point, and thence steer for Jabal Arab, bearing 255° , which leads through the fairway southward of Middle banks; but care must be taken to avoid being set on to those banks by the east-going tidal stream. When Sugar-loaf hill opens out from behind a 320-foot ($95^{\text{m}7}$) bluff between it and the coast, bearing about 210° , the vessel should steer for the conspicuous tree north-eastward of Puhal point, bearing 297° ; but caution must be exercised, for this leads very close north-eastward of the detached $2\frac{1}{2}$ -fathom ($4^{\text{m}6}$) shoal northward of the western end of A'la Mulk reef and if followed too far will lead on to Puhal patch. Having passed northward of A'la shoal and southward of Puhal patch, the anchorage off Läft point may be approached between Ked shoal and the spit extending from Low point. Strong eddies and overfalls may be expected off these shoals at spring tides. 40 45 50 55

Khör Masakeh.—This branch of the channel through Clarence strait (see page 119), though wider than Khör Gürän, is seldom used by the pilots, for the banks on either side are in most places steep-to

Chart 753.

and, being covered, do not show in the muddy water. It was reported in 1912 that this channel had silted up and could then only be used by small craft with local knowledge.

5 About $3\frac{1}{2}$ miles westward of Puhal point is the eastern extremity of a low island lying about half a mile off the northern shore ; it is steep-to on its southern side, but there is no channel northward of it.

The town of Khamir, about $8\frac{1}{2}$ miles west-south-westward of Puhal point, is built round a fort with a high square tower ; the town stands 10 about half a mile inland, with a date grove eastward of it. There are two pyramidal hills, 150 feet (45^m7) high, about 2 or 3 miles west-south-westward of the town. About half a mile west-south-westward of the town is the entrance to Khamir backwater, a narrow channel, with a least depth of 4 fathoms (7^m3).

15 Anchorage has been obtained, in a depth of $3\frac{1}{2}$ fathoms (6^m4), about half a mile offshore south-eastward of the town of Khamir.

The north-western shore of Khōr Masakeh south-westward of the entrance to Khamir backwater is low swampy land covered with mangroves, probably the delta of Rūd-i-Mehrān.

20 The south-eastern side of Khōr Masakeh is formed by the north-western side of the large low island, covered with scrub, which, dividing Clarence strait into two channels, extends about 13 miles south-westward from Low point.

Khōr Gūrān.—Anchorage.—The navigable channel in this 25 part of Clarence strait is only about one cable wide with depths of over 5 fathoms (9^m1) at its entrance, about 4 cables north-westward of Lāft point ; but there are depths greater than $3\frac{1}{2}$ fathoms (6^m4) over a width of 3 cables ; southward of Low point it is not less than 3 cables wide, except at the sharp turn from north-west to south-west in its 30 southern part, where it is 2 cables wide ; although tortuous it is usually preferred by the pilots, as the depths in the fairway are not less than 5 fathoms (9^m1) throughout, and, except at the western entrance, the banks are well defined by mangroves. Khōr Gūrān joins Khōr Ja'afari about 2 miles west-south-westward of the small 35 village of Gūrān, situated on Qishm island, about 14 miles south-south-westward of Lāft point (*Lat. 26° 56' N., Long. 55° 44' E.*). The southern end of the channel is the most difficult as it is very narrow, and several large bāgalas are sometimes moored off the village ; the banks cover at high water, and are not marked by mangroves. The 40 southern entrance is most easily navigated when the tide has fallen sufficiently to show the edges of the flats. Fishing stakes, hardly visible at high water, block the greater part of the channel south-westward of Gūrān.

In 1924, H.M.S. *Triad* reported that, from abreast of Hinderābi 45 islet, lying about one mile southward of Lāft point, to abreast of Kuwardin (Kuvadin), situated about $5\frac{1}{2}$ miles south-south-eastward of that point, the banks on the western side of the channel had extended eastward in places for about half a mile and that the channel had correspondingly shifted eastward. Great caution is necessary when 50 opposite the narrow channel leading north-westward about $2\frac{1}{2}$ miles northward of Gūrān, as there the main channel has silted up, to a depth of about 9 feet (2^m7), from the southern shore for about three-quarters of its width, leaving only a narrow channel with a least depth in it of 4 fathoms (7^m3). Westward of Gūrān, the channel is very

Chart 753.

narrow and not straight as shown on chart 753; but the passage presented no difficulty at low water as the banks were uncovered and a single line of fishing stakes on the southern side showed the extent of that bank, which was steep-to.

Läft, about 3 miles south-eastward of Läft point, is a small town at the foot of a hill, 200 feet (61^m0) high, rising from the beach to cliffs; at the southern end of the town is a ruined fort with three towers.

Läft creek, in which native craft lie, is entered at the southern end of Hinderäbi islet and runs south-eastward close to the coast of Qishm island as far as the town. Hinderäbi islet is low and at its northern end is a small white tomb. The creek is narrow and its south-western side consists of mud banks covered with mangrove bushes. There is a conspicuous hill, from 500 to 600 feet (152^m4 to 182^m9) high, ¹⁵ about one mile east-north-eastward of Läft town, on the summit of which are reported to be the ruins of some reservoirs.

Anchorage was obtained by H.M.S. *Triad*, in a depth of 8 fathoms (14^m6), sand, about 3 cables south-westward of Hinderäbi islet. Anchorage was also obtained by the same vessel, in a depth of 7 fathoms ²⁰ (12^m8), mud, close westward of Gürän village.

Chart 3791, plan of Basidü and its approaches.

Khör Ja'afari.—Directions.—Khör Ja'afari (Jafuri), the westernmost portion of Clarence strait, extends, from the junction of Khör Masakeh and Khör Gürän, in a south-westerly direction for about ²⁵ 16 miles, to Bäsidü point.

The mainland on the northern side of the channel is low for the first 7 or 8 miles, being formed by the delta of the Rüd-i-Mehrän. About $4\frac{1}{2}$ miles north-north-westward of Bäsidü point is a low rounded point, on which are the ruins of many reservoirs.

On the southern shore, a white tomb is situated about 12 miles eastward of Bäsidü point (*Lat.* $26^{\circ} 39' N.$, *Long.* $55^{\circ} 16' E.$); the village of Diräku, $7\frac{1}{2}$ miles eastward of Bäsidü point, stands on rising ground, and about 2 miles south-westward of Diräku is a large village, with extensive date groves and much cultivation; these two villages ³⁵ can be seen from the strait. Qal'eh Häji Kari (Kalat Hajji Karitu), situated on the coast about 3 miles westward of Gürä, is a ruined fort standing on a small rocky mound with Nakhlistän, or Old Bäsidü, about half a mile south-westward of it. Between Gürä and Qal'eh Häji Kari the coast is low and barren, but here and there are large ⁴⁰ date plantations with a few houses.

Chart 3791, plan of Basidü and its approaches, 753.

A mud flat, which dries in most places, fringes the coast of Qishm island from Gürän to Bäsidü point and extends offshore from 2 cables to one mile in places.

A middle ground, over which the depths are less than 3 fathoms (5^m5), lies offshore between Diräku and Bäsidü; in March, 1919, H.M.S. *Bramble* reported that changes appeared to have taken place and that the middle ground did not extend so far eastward and westward as charted, but lay farther southward. The navigable channel ⁵⁰ is northward of the middle ground and is about one mile wide.

The northern side of the navigable channel is bounded for the whole of its length by an extensive sand bank; H.M.S. *Bramble* reported that, northward of the middle ground, this bank appears

Charts 3791, plan of Basidu and its approaches, 753.

to have extended at least half a mile farther southward than charted.

In order to keep in the fairway, from a point about 3 miles west-south-westward of Gürān, vessels should keep from about $1\frac{1}{4}$ miles to three-quarters of a mile off the southern shore of the strait until northward of Kunār Siāh, situated about $1\frac{1}{2}$ miles north-eastward of Dirāku, where they should cross over and proceed along the southern edge of the extensive sand bank on the northern side of the channel, 10 in a depth of about 5 fathoms ($9^{\text{m}}1$), until past the middle ground, whence a south-westerly course may be steered for the anchorage off Bāsidū.

Chart 3791, plans of Basidu anchorage and Basidu and its approaches.

Bāsidū.—**Shoals.**—**Beacon.**—Bāsidū point, on which the village 15 of Bāsidū is situated, is a cliff, 20 feet ($6^{\text{m}}1$) high, on the level summit of which are a few small buildings and some date trees. The point is fringed to a distance of about 2 cables offshore by a shoal, over which the depths are less than 18 feet ($5^{\text{m}}5$). A rocky patch, which nearly dries and close outside which there is a depth of 16 feet ($4^{\text{m}}9$), extends 20 three-quarters of a cable north-westward from a position close north-westward of the pier at Bāsidū.

About 4 cables north-westward of Bāsidū point is The Gut, about one cable wide, with depths of from 11 to 14 fathoms ($20^{\text{m}}1$ to $25^{\text{m}}6$), extending north-eastward and south-westward.

25 Beacon shoal, the north-eastern end of which is rocky, the remainder being of sand, extends south-south-westward from a position about 6 cables westward of Bāsidū point. For about half a cable from its north-eastern end, the shoal dries, as it does also in places farther southward. From the southern end of the shoal, a shallow sandspit 30 extends south-south-eastward for about $3\frac{1}{4}$ miles between the northern extremity of The Flat (page 116) and the mud and sand flat extending from the western end of Qishm island. There is a narrow channel between Beacon shoal and its spit on the one hand and the mud and sand flat on the other, but it is not navigable.

35 A beacon (*Lat. $26^{\circ} 39' N.$, Long. $55^{\circ} 15' E.$*), consisting of a white mast, about 40 feet ($12^{\text{m}}2$) high, with five white battens giving the appearance of being surmounted by a white circular disc, stands on the north-eastern extremity of Beacon shoal.

North bank, apparently a south-westerly extension of the sand 40 bank on the northern side of Khōr Ja'afarī, extends north-eastward from a position about 6 miles west-south-westward of Bāsidū point, with depths of from 12 to 15 feet ($3^{\text{m}}7$ to $5^{\text{m}}5$).

Bāsidū village stands on Bāsidū point, but the buildings are all in a state of decay. In 1928, the most conspicuous object when approaching 45 from southward or westward was a tall bushy tree situated in the village, about $4\frac{1}{4}$ cables east-north-eastward of the point. About a quarter of a mile southward of the point is a conspicuous building. A small cairn stands on Bāsidū point. A monument stands about half a mile north-eastward, and a guard house about 4 cables east-north-eastward of the point. About a mile eastward of the point 50 there is a village.

A dilapidated stone pier, the head of which is awash, extends north-westward from a position about one cable north-eastward of Bāsidū point; there are some steps at the head on both sides of the pier.

Charts 753, 2830, 2837a, 748b.

Chart 3791, plans of Bāsidū anchorage and Bāsidū and its approaches.

Fresh beef, of poor quality, may be obtained if one day's notice is given ; vegetables may be obtained in small quantities.

Anchorage.—Depths.—The approach to Bāsidū anchorage from south-westward is between North bank, on the north-western side, and The Flat and Beacon shoal, on the south-eastern side ; there is a depth of about 21 feet ($6^{\text{m}}4$) in the fairway westward of The Flat, deepening to 6 and 9 fathoms ($11^{\text{m}}0$ and $16^{\text{m}}6$) westward of Beacon shoal.

The approach to Bāsidū anchorage from south-eastward may be made between The Flat, on the southern and south-western sides, and Qishm island and Beacon shoal, on the northern and north-eastern sides ; the least depth in the fairway, in 1928, was about 27 feet ($8^{\text{m}}2$).

The best anchorage off Bāsidū sheltered by Beacon shoal from the shamāl, which in this locality blows from south-westward, is on the south-eastern side of The Gut about 3 cables north-westward of the pier, or farther north-eastward, in depths of from 7 to 5 fathoms ($12^{\text{m}}8$ to $9^{\text{m}}1$), clay and good holding ground ; care should be taken to avoid anchoring in The Gut.

It is advisable to moor with the anchors laid north-eastward and south-westward, for, when the wind is strong and in opposition to the tidal stream, a vessel at single anchor rides very uneasily.

Tidal streams.—The tidal streams in the western part of Clarence strait and at Bāsidū anchorage attain a rate of about 3 knots at springs. Between Ras Dastakān and Ras Kharyu, about 24 miles westward, the east-going stream sets north-westward, northward, and north-eastward, converging on the anchorage ; the west-going stream sets south-westward and westward.

Northward of The Flat, the tidal streams have been found to set fairly along the channel between it and Qishm island, and appear to have no tendency to set on to the shoals.

Directions.—Bāsidū anchorage is not recommended for vessels with a draught of more than 20 feet ($6^{\text{m}}1$), and those with a draught of more than 17 feet ($5^{\text{m}}2$) should not enter until the tide has risen above mean sea level.

A vessel approaching from eastward and intending to use the channel northward of The Flat, should steer for the eastern Hummock, bearing 274° , until the point $7\frac{1}{4}$ miles west-south-westward of Ras Tarkūn bears 000° , distant about 8 cables, when she should steer for the 10-foot ($3^{\text{m}}0$) islet, situated close south-westward of Ras Kakūn (*Lat.* $26^{\circ} 34' N.$, *Long.* $55^{\circ} 22' E.$), bearing 264° , until the former point bears 073° , when she should keep it astern on that bearing until the islet is abeam ; thence she should steer to pass about three-quarters of a mile southward of Ras Dastakān, and thence keep in the middle of the fairway on the eastern side of the north-western end of The Flat on the south and west, and the sandspit extending from the southern end of Beacon shoal, on the east ; when the southern end of Beacon shoal is abeam, course may be altered north-eastward, and the beacon on the northern end of the shoal passed at a distance of about a quarter of a mile, and thence course may be altered for the anchorage off Bāsidū.

In 1931, the least depth obtained on this route was 24 feet ($7^{\text{m}}3$). The stone hut about three-quarters of a mile north-westward of the point situated about $7\frac{1}{4}$ miles west-south-westward of Ras Tarkūn.

Chart 3791, plans of Basidu anchorage and Basidu and its approaches. sometimes stands out clearly when approaching from eastward. The 550-foot (167^m6) hill, about 4½ miles west-north-westward of this point, is a good mark, being the western extremity and the highest part of a range, and falling abruptly to a valley on its western side. Caution is, however, necessary as the coastline is incorrectly charted. *Charts 3791, plan of Basidu and its approaches, 753.*

A vessel approaching from eastward and intending to pass outside The Flat, should avoid Coote rock (page 117) and pass about 2 miles northward of Jazirat Tunb, proceeding thence as directed below for the approach from southward.

A vessel approaching from southward and having passed on either side of Jazirat Nābiyu Tunb, should bring it to bear about 169°, astern, and Grubb's notch (*see* below), if visible, ahead, bearing 349°; this course will lead about 5 miles westward of the shoalest part of Mariner shoal, and of the western edge of The Flat. When the eastern Hummock bears 072°, she should steer for Kūh-i-Puhal-i-Khamir (page 120), if visible, bearing 044°, until Bāsidū beacon is abeam. It has been reported, however, that in normal summer visibility it is doubtful if the foregoing marks could be seen in time to be of use. The least depth on this route is about 3½ fathoms (6^m4). The edges of Mariner shoal (*Lat. 26° 22' N., Long. 55° 18' E.*) and The Flat are indicated by discoloured water; and near the edge of the latter a number of fishing boats may often be seen at anchor.

25 A vessel approaching from westward should pass about 3 miles southward of Ras Kharyu (page 130) and steer east-north-eastward until Kūh-i-Puhal-i-Khamir bears 044°, thence she should proceed as previously directed.

At night, a vessel should anchor off The Flat, in a depth of about 30 6 fathoms (11^m0), and await daylight before proceeding farther.

Charts 753, 2830.

COAST.—Aspect.—The coast of Lingeh, one of the Persian districts under the Governor of the Gulf Ports, extends from Khamir in a general south-westerly direction for about 58 miles to Ras Bustāneh whence it trends north-westward for a further 22 miles to Chārak.

About 10 miles northward of Bāsidū point is a rounded mountain, 2,940 feet (896^m1) high, at the eastern end of the range on the southern side of the Rūd-i-Mehrān (*see* page 120). Grubb's notch, in the same range, and about 14 miles westward of this mountain, is a saddle-shaped summit, 2,950 feet (899^m2) high. (*See* view on chart 2837a). Lingeh peak is a conspicuous summit, 3,900 feet (1188^m7) high, about 12 miles west-north-westward of Grubb's notch; between the peak and Jabal Bustāneh (page 131), about 19 miles south-south-westward, 46 is an extensive plain, which, after rain, becomes swampy.

Charts 3791, plan of Basidu and its approaches, 753.

The coast in the vicinity of the low rounded point, about 4½ miles north-north-westward of Bāsidū point, is low, but about 5 miles westward of the rounded point it rises in a mountain to an elevation of 50 1,330 feet (405^m4), its outline being very irregular; its eastern part is of a light colour whereas the western part is dark and apparently of volcanic formation; westward of the mountain is a plain. On the south-western side of the plain, about 7 miles in that direction

Charts 3791, plan of Basidu and its approaches, 753.

from the mountain, the land again becomes hilly. The north-eastern part of these hills is a long, light-coloured ridge, 960 feet (292^{m6}) high, with a very jagged outline, which is fairly conspicuous from east-south-eastward ; the remaining hills are dark and of volcanic origin ; near the coast and about 1½ miles south-westward of the southern end of the ridge is a flat-topped hill, 620 feet (189^{m0}) high, which is conspicuous from eastward ; Al Büza, three-quarters of a mile eastward of the last-mentioned hill, and on the coast, is similar to it but smaller.

Qal'eh Lashtun (*Lat. 26° 38' N., Long. 54° 52' E.*), about 8 miles westward of Al Büza and about 4 miles inland, is about 600 feet (182^{m9}) high, with a sloping summit and precipitous sides. The hill, which is detached from others between it and the coast and is visible over them, is conspicuous from eastward and south-eastward, 15 when it appears wedge-shaped. Another hill, 400 feet (121^{m9}) high, rises to a wedge-shaped summit, about 4 miles south-westward of Qal'eh Lashtun and is conspicuous from eastward.

Chart 3791, plan of Basidu and its approaches.

Coast.—Anchorage.—Bandar Hamairān is a bight in the coast 20 lying between the point situated about 2 miles southward of the 1330-foot (405^{m4}) mountain, mentioned above, and Ras ash Shāvari, about 5 miles south-westward. A shoal, with a least charted depth of 10 feet (3^{m0}), lies about 1½ miles from the head of the bight, and depths of 4 fathoms (7^{m3}) lie between it and the coast, where native 25 craft anchor. Bandar Mu'allim village stands in a date grove about one mile northward of Ras ash Shāvari.

Kung is a town situated about 7 miles south-westward of Ras ash Shāvari ; it extends about half a mile along the sandy coast, and contains many well-built houses and several gilded mosques. At 30 the south-western end of the town are the ruins of a factory, near which, on the beach, is a round fort.

Anchorage, sheltered except from the suhaili, may be obtained, in a depth of 5 fathoms (9^{m1}), mud, abreast Kung about 1½ miles offshore.

Landing is bad at low water, as the sandy beach dries off in ridges 35 for a distance of about 2½ cables, with depths of one or 2 feet (0^{m3} or 0^{m6}) between the ridges.

On the coast, about 2 miles south-westward of Kung, there is a date plantation.

The coast from the low rounded point about 4½ miles north-north-westward of Bāsidū point to a position about 2½ miles south-westward of Kung is fringed by a bank with depths of less than 3 fathoms (5^{m5}), which extends as much as 1½ miles offshore, but it has not been thoroughly surveyed. As the edge of this bank is very steep-to in places, caution must be exercised when approaching it.

Chart 2837a, plan of Lingeḥ.

Lingeḥ.—This town, the seat of a Deputy Governor of the Gulf Ports, is situated about 3½ miles south-westward of Kung. In it are many well-built houses occupying a narrow strip of the foreshore, and a short distance inland of it are some date groves. In the fore- 50 noon, the town usually shows up well from seaward. The Deputy Governor's house on the sea-front is conspicuous and the flag is displayed from a tall white flagstaff in the vicinity. At the south-western end of the town is a conspicuous tall minaret ; its upper part, of grey

Chart 2837a, plan of Lingeh.

and green bricks with a dark green roof, shows up well against the light-coloured land behind it. In addition, there are two wireless masts, about 110 feet (33^m5) in height, situated about half a mile inland near the northern end of the town ; but it was reported in 1931 that they are not easily identified. Outside the town are many birkehs or circular domed reservoirs.

The Custom house (*Lat. $26^{\circ} 33'$ N., Long. $54^{\circ} 53'$ E.*) is on the sea-front, south-westward of the Deputy Governor's residence, and on either side of it are boat cambers which dry.

The exports are carpets, canvas, gum, pearls, and dried fish ; the imports are iron, hardware, cloth, spices, sugar, timber, coffee, tea, etc.

Anchorage.—Tidal streams.—Anchorage may be obtained, in a depth of about $5\frac{1}{2}$ fathoms (10^m1), clay and good holding ground, about $8\frac{1}{2}$ cables south-eastward of the Custom house. Small craft anchor about 3 cables farther in, in depths of about $4\frac{1}{2}$ fathoms (7^m8). The anchorage is sheltered except from the suhaili, which causes a heavy sea.

The best landing place is in the camber north-eastward of the Custom house. The facilities for working cargo are good.

Off Lingeh, the tidal streams set south-westward and north-eastward at a rate of from a quarter to three-quarters of a knot.

Supplies.—Communications.—Beef of poor quality, mutton, and vegetables can be obtained. Duck, bustard, and grouse can be shot during the winter months, but it is necessary to travel some miles inland to get them.

Lingeh is connected to the general telegraph system.

For communication by air, see page 17.

Chart 3791, plan of Basidu and its approaches.

Coast.—Dangers.—Jisheh, about 2 miles south-westward of Lingeh, is a small village in which there are two towers and near which are some date trees.

Ras Kharyu, about one mile south-westward of Jisheh, is low and sandy, but has a rocky beach. A spit, over which there is a depth of 9 feet (2^m7), extends about $4\frac{1}{2}$ cables south-eastward from the point and a rocky patch, over which there is a depth of 15 feet (4^m6), lies about 8 cables southward of the point. The spit and the rocky patch are both steep-to.

Shiās bay, entered between Ras Kharyu and Ras ash Shiās, about $3\frac{1}{2}$ miles south-westward, is fringed by a bank with depths of less than 3 fathoms (5^m5), extending about half a mile offshore.

Charts 753, 2830.

Shiās village, about $2\frac{1}{2}$ miles westward of Ras Kharyu and three-quarters of a mile inland, is obscured from seaward by a thick grove of date trees. Ras ash Shiās is very low and sandy. About 9 miles westward of it is Ras Bustāneh, the shore of the bay between being fringed by a bank, with depths of less than 3 fathoms (5^m5), which extends three-quarters of a mile off in places. The shore of this bay is, low and sandy, but it is fronted by a rocky beach. About one mile westward of Ras ash Shiās are some white sand hills rising close to the beach to an elevation of about 30 feet (9^m1) ; westward of these the land rises in a gentle slope from the coast to the foothills of Jabal Bustāneh, which are from 200 to 300 feet (61^m0 to 91^m4) high. About $2\frac{1}{2}$ miles westward of Ras ash Shiās, is a grove of date

Charts 753, 2830.

trees, close to the shore. A white birkeh, about one mile farther westward and about a quarter of a mile inland, is conspicuous.

Jabal Bustāneh is a remarkable detached group of dark volcanic hills of very irregular outline ; the highest part, near the middle of the group, is a ridge near the southern end of which, and about $4\frac{1}{4}$ miles north-eastward of Ras Bustāneh, is a small peak resembling a tower, which attains an elevation of 1,750 feet (533 m^4) and is conspicuous, especially from eastward or westward. The south-western part of the group, about 3 miles north-westward of Ras Bustāneh (Lat. $26^{\circ} 30' N.$, Long. $54^{\circ} 38' E.$), has been mistaken for that point when the low land forming the latter has been invisible. (See view on chart 2837a). Between Jabal Bustāneh and the hills north-westward of Lingeh, the land rises in a gentle slope from the coast to an elevation of about 300 feet (91 m^4), thence falling in cliffs to the southern edge of the low plain between that mountain and Lingeh peak (page 128).

Bustāneh, a fishing village, about 2 miles north-eastward of Ras Bustāneh, is small ; in it there is a round tower and on rising ground behind it is a birkeh. There is a date grove at the village and another between it and the point.

Ras Bustāneh is low, and brown in colour ; about 3 cables westward of it are some date palms. A shoal, over which the depths are less than 3 fathoms (5 m^5), extends about half a mile offshore on the south-western side of the point.

Charts 3791, plan of Basidu and its approaches, 753.

Anchorages.—Shiās bay affords good anchorage, in depths of from 5 to 7 fathoms (9 m^1 to 12 m^8) ; it is sheltered from the shamāl, and the nashi does not raise a heavy sea as Qishm island and The Flat afford a certain amount of protection.

Charts 753, 2830.

Anchorage may be obtained off the coast between Ras ash Shiās and Ras Bustāneh ; it is open to the shamāl but is well sheltered from the nashi. Good landing can be effected, on the sandy beach near the grove of date trees, about $2\frac{1}{4}$ miles westward of Ras ash Shiās.

Anchorage for boats may be obtained, in a depth of 4 fathoms (7 m^3), close inshore nearly one mile south-westward of Bustāneh village. The anchorage is partly sheltered from the shamāl which in this locality blows from westward ; larger vessels cannot get close enough in to obtain much shelter.

Tidal streams.—The tidal streams off Ras Kharyu and Ras ash Shiās attain a rate of about $1\frac{1}{2}$ knots and cause a discolouration of the water. See also page 127.

Chart 2830.

Off-lying dangers.—A shoal, with a least depth of 4 fathoms (7 m^3), and steep-to, lies about $1\frac{1}{4}$ miles south-westward of Ras Bustāneh.

Fārūr shoal, with a least depth of $2\frac{1}{4}$ fathoms (4 m^6), coral, rock, shell and sand, and steep-to, lies about $5\frac{1}{2}$ miles south-westward of Ras Bustāneh. Between this shoal and the 4-fathom (7 m^3) shoal north-eastward of it, the depths are irregular, and the tidal streams, which set strongly between Fārūr shoal and Ras Bustāneh, cause much discolouration of the water, as well as tide-rips and overfalls. The shoal abounds with fish.

Charts 2830, 2837a, 748b.

Chart 2837a, plan of Lingeh.

and green bricks with a dark green roof, shows up well against the light-coloured land behind it. In addition, there are two wireless masts, about 110 feet (33^m5) in height, situated about half a mile inland near the northern end of the town ; but it was reported in 1931 that they are not easily identified. Outside the town are many birkehs or circular domed reservoirs.

The Custom house (*Lat. $26^{\circ} 33' N.$, Long. $54^{\circ} 53' E.$*) is on the sea-front, south-westward of the Deputy Governor's residence, and on either side of it are boat cambers which dry.

The exports are carpets, canvas, gum, pearls, and dried fish ; the imports are iron, hardware, cloth, spices, sugar, timber, coffee, tea, etc.

Anchorage.—Tidal streams.—Anchorage may be obtained, in a depth of about $5\frac{1}{2}$ fathoms (10^m1), clay and good holding ground, about $8\frac{1}{2}$ cables south-eastward of the Custom house. Small craft anchor about 3 cables farther in, in depths of about $4\frac{1}{2}$ fathoms (7^m8). The anchorage is sheltered except from the suhaili, which causes a heavy sea.

The best landing place is in the camber north-eastward of the Custom house. The facilities for working cargo are good.

Off Lingeh, the tidal streams set south-westward and north-eastward at a rate of from a quarter to three-quarters of a knot.

Supplies.—Communications.—Beef of poor quality, mutton, and vegetables can be obtained. Duck, bustard, and grouse can be shot during the winter months, but it is necessary to travel some miles inland to get them.

Lingeh is connected to the general telegraph system.

For communication by air, see page 17.

Chart 3791, plan of Basidu and its approaches.

Coast.—Dangers.—Jisheh, about 2 miles south-westward of Lingeh, is a small village in which there are two towers and near which are some date trees.

Ras Kharyu, about one mile south-westward of Jisheh, is low and sandy, but has a rocky beach. A spit, over which there is a depth of 9 feet (2^m7), extends about $4\frac{1}{2}$ cables south-eastward from the point and a rocky patch, over which there is a depth of 15 feet (4^m6), lies about 8 cables southward of the point. The spit and the rocky patch are both steep-to.

Shiās bay, entered between Ras Kharyu and Ras ash Shiās, about 3 $\frac{1}{2}$ miles south-westward, is fringed by a bank with depths of less than 3 fathoms (5^m5), extending about half a mile offshore.

Charts 753, 2830.

Shiās village, about $2\frac{1}{2}$ miles westward of Ras Kharyu and three-quarters of a mile inland, is obscured from seaward by a thick grove of date trees. Ras ash Shiās is very low and sandy. About 9 miles westward of it is Ras Bustāneh, the shore of the bay between being fringed by a bank, with depths of less than 3 fathoms (5^m5), which extends three-quarters of a mile off in places. The shore of this bay is low and sandy, but it is fronted by a rocky beach. About one mile westward of Ras ash Shiās are some white sand hills rising close to the beach to an elevation of about 30 feet (9^m1) ; westward of these the land rises in a gentle slope from the coast to the foothills of Jabal Bustāneh, which are from 200 to 300 feet (61^m0 to 91^m4) high. About $2\frac{1}{2}$ miles westward of Ras ash Shiās, is a grove of date

Charts 753, 2830.

trees, close to the shore. A white birkeh, about one mile farther westward and about a quarter of a mile inland, is conspicuous.

Jabal Bustāneh is a remarkable detached group of dark volcanic hills of very irregular outline ; the highest part, near the middle of the group, is a ridge near the southern end of which, and about 4½ miles north-eastward of Ras Bustāneh, is a small peak resembling a tower, which attains an elevation of 1,750 feet (533^m4) and is conspicuous, especially from eastward or westward. The south-western part of the group, about 3 miles north-westward of Ras Bustāneh (Lat. 26° 30' N., Long. 54° 38' E.), has been mistaken for that point when the low land forming the latter has been invisible. (See view on chart 2837a). Between Jabal Bustāneh and the hills north-westward of Lingeh, the land rises in a gentle slope from the coast to an elevation of about 300 feet (91^m4), thence falling in cliffs to the southern edge of the low plain between that mountain and Lingeh peak (page 128).

Bustāneh, a fishing village, about 2 miles north-eastward of Ras Bustāneh, is small ; in it there is a round tower and on rising ground behind it is a birkeh. There is a date grove at the village and another between it and the point.

Ras Bustāneh is low, and brown in colour ; about 3 cables westward of it are some date palms. A shoal, over which the depths are less than 3 fathoms (5^m5), extends about half a mile offshore on the south-western side of the point.

Charts 3791, plan of Basidu and its approaches, 753.

Anchorages.—Shiās bay affords good anchorage, in depths of from 5 to 7 fathoms (9^m1 to 12^m8) ; it is sheltered from the shamāl, and the nashi does not raise a heavy sea as Qishm island and The Flat afford a certain amount of protection.

Charts 753, 2830.

Anchorage may be obtained off the coast between Ras ash Shiās and Ras Bustāneh ; it is open to the shamāl but is well sheltered from the nashi. Good landing can be effected, on the sandy beach near the grove of date trees, about 2½ miles westward of Ras ash Shiās.

Anchorage for boats may be obtained, in a depth of 4 fathoms (7^m3), close inshore nearly one mile south-westward of Bustāneh village. The anchorage is partly sheltered from the shamāl which in this locality blows from westward ; larger vessels cannot get close enough in to obtain much shelter.

Tidal streams.—The tidal streams off Ras Kharyu and Ras ash Shiās attain a rate of about 1½ knots and cause a discolouration of the water. See also page 127.

Chart 2830.

Off-lying dangers.—A shoal, with a least depth of 4 fathoms (7^m3), and steep-to, lies about 1½ miles south-westward of Ras Bustāneh.

Fārūr shoal, with a least depth of 2½ fathoms (4^m6), coral, rock, shell and sand, and steep-to, lies about 5½ miles south-westward of Ras Bustāneh. Between this shoal and the 4-fathom (7^m3) shoal north-eastward of it, the depths are irregular, and the tidal streams, which set strongly between Fārūr shoal and Ras Bustāneh, cause much discolouration of the water, as well as tide-rips and overfalls. The shoal abounds with fish.

Charts 2830, 2837a, 748b.

Chart 2830.

Islands southward of Ras Bustāneh.—Anchorages.—Jazirat Sirri, about 34 miles southward of Ras Bustāneh, has several small detached dark-coloured hillocks, none of which are more than 50 feet (15^m2) high. (See view on chart 2837a). Several rocks awash lie about half a mile off the north-western side of the island, the positions of which may best be seen on the chart. The eastern side of the island, and the low sandy point forming its south-eastern extremity, are steep-to, but elsewhere foul ground extends about half a mile offshore.

10 Sirri village is situated on the southern coast of the island about 1½ miles from its south-eastern extremity. Near the village is a flag-staff and several large and conspicuous trees. On the northern part of the island, are several houses and small date groves.

15 Anchorage off the island is indifferent; the recommended berth is, in a depth of about 8 fathoms (14^m6), rock, about half a mile offshore, in the position indicated on the chart; this position is partially sheltered, both from the shamāl and the nashi, but the holding ground is bad, as is the landing at the village.

20 Jazirat Nābiyu Fārūr, about 24 miles south-south-westward of Ras Bustāneh (*Lat.* 26° 30' *N.*, *Long.* 54° 38' *E.*), has a remarkable dark-coloured saddle hill, 120 feet (36^m6) high, on its eastern side. (See view on chart 2837a). A rocky reef, partly above water, and sometimes marked by breakers, extends about one mile north-north-westward from the island. The southern and western sides of the island are fringed by a narrow reef.

25 A bank, over which there is a depth of 8 fathoms (14^m6), hard bottom, lies about 1½ miles south-south-westward of the island; it has not been thoroughly examined and it is therefore possible that 30 there may be less depths over it.

A bank, over which there is a depth of 10 fathoms (18^m3), lies about one mile westward of the island.

With the foregoing exceptions, the island is comparatively steep-to.

35 Jazirat Fārūr, about 12½ miles south-south-westward of Ras Bustāneh, rises with dark-coloured volcanic hills to a table-topped, conical peak, 476 feet (145^m1) high and surmounted by a cairn. (See view on chart 2837a). The island is very steep-to, especially on the northern, eastern, and southern sides. Several detached rocks lie above and below water close off the western side.

40 From its height, dark colour, and the fact that it is steep-to, the island is sometimes made at night, in thick weather, or during the haze of a summer shamāl; when attempting this, caution, however, is necessary, for the tidal streams set strongly past it, and soundings give no warning of its proximity. The summit of the island is obscured 45 by other hills from eastward and south-eastward.

The island is inhabited and there are two villages, the larger of which is situated on the eastern side in the dry bed of a river, with cliffs 50 feet (15^m2) high on either hand, and in which there are a few date palms; the other village consists of a few stone and mud huts near 50 the southern point of the island with, about half a mile eastward of it, and standing on higher ground, the Custom house, a square stone building with a flagstaff.

The coastline of the island is mainly rocky, backed by cliffs, with an occasional small sandy bay. The best landing places are at the

Chart 2830.

villages where there are sandy beaches. The island abounds with gazelle, and fish are plentiful in the vicinity.

Anchorage was obtained by H.M.S. *Crocus*, in 1929, off the village on the eastern side of the island, in a depth of 27 fathoms (49^m4), sand and shells, about 2½ cables offshore, with the village bearing about 240°. Anchorage has also been obtained, in a depth of 20 fathoms (36^m6), with the village bearing about 257°.

Anchorage has been obtained in a small bay, at the southern end of the island, in a depth of 17 fathoms (31^m1), sand and shells. In 10 suitable weather, landing can be effected on the eastern part of a steeply shelving beach.

Anchorage may be obtained off the western side of the island, in a depth of 7 fathoms (12^m8), rock and sand, with the summit bearing 090°, distant 14 cables.

Directions.—Vessels may pass either northward or southward of any of the foregoing islands, and by day, unless very hazy, the passages present no difficulty. For vessels proceeding up or down the gulf, the passage between Färür shoal (*Lat.* 26° 26' N., *Long.* 54° 33' E.) and Jazirat Färür is to be preferred. By keeping 20 in depths greater than 25 fathoms (45^m7), vessels will pass well southward of Färür shoal, and Jazirat Färür usually shows up well at night; but vessels must guard against a northerly set which is sometimes experienced between Jazirat Tunb and Jazirat Shaikh Shu'aib, see page 140.

Coast.—Anchorage.—Mughū bay is entered between Ras Bustāneh and Ras Yarid (Yurd), a low point, about 13½ miles north-westward; its shores are low and sandy, and near the former point the beach is rocky; at either end of the bay the land rises in a gentle slope to the bases respectively, of Jabal Bustāneh and Küh Namaki 30 (see below), between which, and about 2½ miles inland, is precipitous broken ground.

A bank, with depths of less than 3 fathoms (5^m5), extends from half a mile to 1½ miles offshore, and a detached shoal, with a depth of 2½ fathoms (4^m1), lies about 1½ miles offshore, and about 4 miles 35 south-eastward of Ras Yarid.

Duwwān is a small village, in which there is a fort with two white towers, standing about 5½ miles north-north-westward of Ras Bustāneh; behind the village, and on either side of it, are date groves. Mughū, about 4 miles westward of Duwwān, is a somewhat larger 40 village in which are several round towers; a large fort with three conspicuous square towers stands immediately behind the village with a date grove inland and westward of it; low sandhills extend about 2 miles eastward of the village.

From Ras Yarid, the land begins to rise to Küh Namaki (Namki), 45 about 4½ miles north-north-eastward, which is a rugged group of dark-coloured volcanic mountains, about 1,200 feet (365^m8) high, which has a jagged outline, but no definite summit; from westward, its northern bluff is conspicuous, and it is reported that its south-eastern edge appears as a peak from the same direction.

A bank, with depths of less than 3 fathoms (5^m5), extends nearly 2 miles south-westward from Ras Yarid, and is steep-to at its outer edge; it is marked by discolouration of the water.

Mughū bay affords good shelter from the kaus on its eastern side,

Chart 2830.

but it is a dangerous anchorage during a shamāl. It is open to the suhaiil which probably raises a heavy sea, but the holding ground is good.

5 Anchorage may be obtained close off the village of Mughūl, in a depth of 4 fathoms ($7^{\text{m}}3$), clay, nearly one mile offshore; unless close inshore, very little shelter is obtained from the shamāl, which, in this bay, blows from westward. In a depth of about 4 fathoms ($7^{\text{m}}3$), the bank extending from Ras Yarid breaks the sea, but some 10 swell rolls in, causing a vessel at anchor to ride uneasily. The depths decrease regularly towards the anchorage.

Chart 2837a, plan of Chārak.

About $3\frac{1}{2}$ miles north-north-westward of Ras Yarid is Hasineh village, at either end of which is a conspicuous round tower; a large fort 15 stands on the coast in front of the village and behind it the land rises gradually to the base of Kūl Namaki (*Lat. $26^{\circ} 40' N.$, Long. $54^{\circ} 26' E.$*).

Anchorage may be obtained off Hasineh, but it is open to the shamāl.

The coast between Hasineh and Chārak, about 7 miles north-westward, is low and sandy, and may be approached to a distance of 20 about one mile.

Chārak.—The town of Chārak, in which are several towers, has a date grove behind it, and on a hillock, about 90 feet ($27^{\text{m}}4$) high, and nearly half a mile inland, is a small fort in ruins. The Shaikh's house, which stands in the middle of the town, is conspicuous. There is a 25 Custom house. Cattle, sheep and goats may be obtained.

A small creek, in which boats are hauled up, is entered about one mile eastward of the Shaikh's house; a village stands on its western bank.

Jabal Hamar (*see* view on chart 2837a) rises to an elevation of 30 370 feet ($112^{\text{m}}8$) about $1\frac{1}{4}$ miles westward of the Shaikh's house and from south-westward appears wedge-shaped; there is a conspicuous birkeh on its southern side.

Coast.—There are two rocky points situated about 2 and 3 miles, respectively, westward of the Shaikh's house; foul ground extends 35 about 4 cables offshore between the eastern point and Ras Tāvīneh, about $2\frac{1}{4}$ miles west-south-westward, and a rocky spit extends about $3\frac{1}{2}$ cables from Ras Tāvīneh. On the latter point, which is about 30 feet ($9^{\text{m}}1$) high, is the village of Tāvīneh, and near it are a few date trees, four towers, and a castle, standing on a rocky hillock.

40 Anchorage.—Good anchorage, sheltered from the prevailing winds but open to the suhaiili, may be obtained off Chārak, in a depth of 4 fathoms ($7^{\text{m}}3$), mud, with Ras Tāvīneh bearing 287° , and the ruined fort about 005° . The shamāl sends in some swell and vessels should, therefore, anchor closer in if their draught permits. The 45 anchorage is well-sheltered from easterly winds. Landing at low water is bad, for the sandy beach in front of the town dries off in ridges for about 2 cables.

Anchorage may be obtained by small vessels about half a mile offshore at Tāvīneh, with Ras Tāvīneh bearing about 295° , distant 50 about three-quarters of a mile; in this position the vessel will be sheltered from the shamāl by the spit extending from the point.

Charts 2830, 2837a, 748b.

CHAPTER V

PERSIAN GULF, NORTH-EASTERN SIDE — COAST OF PERSIA — CHĀRAK TO RAS ASH SHATT, INCLUDING BUSHIRE.

Charts 2830, 2837a, b.

COAST OF SHIBKŪH.—**Aspect.**—The coast of this district of Persia extends from Chārak to Banak, about 140 miles north-westward.

The dominant feature of the whole of the mainland portion of the district is the great maritime range in the southern part of Persia, which rises steeply from the coast at its northern end and, trending south-eastward, gradually recedes inland and terminates in the rounded mountain about 10 miles northward of Bāsidū point (*Lat. 26° 39' N., Long. 55° 16' E.*). *See page 128.* Northward of the plain behind Jabal Bustāneh there are several dark-coloured summits, one of which, situated about 17 miles north-north-westward of that mountain, is about 1,500 feet (457^m2) high, haycock-shaped, and conspicuous.

Chart 2830.

Kūh Namki or Jabal Turanjeh (*see view on chart 2837a*) is of a flattened dome shape, light in colour, and has a small hummock on its summit; it rises to an elevation of 5,150 feet (1569^m7) about 24 miles west-north-westward of the haycock-shaped mountain, and is conspicuous from seaward from off Bāsidū until on an easterly bearing, but within 10 miles of the coast is obscured by a lower range in front of it.

The lower or coastal range is from 2,000 to 3,000 feet (609^m6 to 914^m4) high, and extends westward from a position close northward of Chārak (page 134), to Nakhīlū (page 140). About 8 miles west-north-westward of Chārak, there is a somewhat conspicuous peak.

There are a number of coastal towns and villages on this coast. *25* The population is a mixture of Persian and Arab blood.

Local weather.—*See page 32.*

Coast.—Between Ras Tāvūneh (page 134) and Gurzeh, 13½ miles westward, the coast is steep-to, and within it a plain extends to the foot of the coastal hills. Gurzeh is a small village in which there is *30* a tower and near which is a date grove, situated on the northern shore of a bay, which is fairly steep-to. Anchorage, sheltered from the shamāl, may be obtained close off Gurzeh.

Kalat al Abeid is a fishing village about 4½ miles west-south-westward of Gurzeh. Between these two places the coast is fringed by a *35* flat which extends about half a mile offshore. *See view facing page 138.*

Chart 748b.

Chart 2830.

A conspicuous fort, with a round tower, stands on a hill, 250 feet (76^m2) high, behind Kalat al Abeid, and eastward of the village are a number of date groves. There are two towers, one round and the other square, in the village, and below the fort, on a hillock about 150 feet (45^m7) high, is a tomb ; about one mile eastward of the village are several birkehs.

Anchorage may be obtained close offshore southward of Kalat al Abeid, in a depth of about 4 fathoms (7^m3), sand, with the western extremity of the land bearing 260°. Caution is necessary as the depths in the vicinity may be less. The anchorage is sheltered from the shamāl and partially from the nashi ; about three-quarters of a mile offshore there is but little shelter. Landing at the village is bad and often impracticable.

15 A flat, on which the sea breaks, extends about half a mile offshore between positions about 1 $\frac{1}{4}$ and 4 $\frac{1}{4}$ miles westward of Kalat al Abeid, that part of the coast rising steeply to a small range of hills about 200 feet (61^m0) high.

Chart 2837a, plan of Chiru.

20 Chirū.—Anchorage.—This fishing village, in which there is a conspicuous square fort with a large square tower at each corner, and near which is a large date grove, is situated on the western side of a bay entered about 7 $\frac{1}{2}$ miles westward of Kalat al Abeid. A conspicuous yellow tower, about 30 feet (9^m1) in height, stands on the shore about 4 cables north-eastward of the fort.

Chirū point (*Lat. 26° 41' N., Long. 53° 45' E.*), about three-quarters of a mile south-south-westward of the fort, is low and is steep-to on its southern and eastern sides.

A bank, over which there are depths of less than 3 fathoms (5^m5), 30 extends about 3 $\frac{1}{2}$ cables offshore north-eastward of Chirū village.

Good anchorage may be obtained off Chirū, in a depth of about 8 fathoms (14^m6) ; it is easy of access, sheltered from the shamāl, but is open to easterly winds.

Landing may be effected, opposite the fort or the village, on a 35 sandy beach which is steep-to, but during easterly winds it is bad.

Chart 2830.

Coast.—Between Chirū point and Ras Nakhilū, about 16 miles north-westward, the coast rises steeply to hills which decrease in height towards, and terminate near the former point.

40 A bank, over which there are depths of less than 3 fathoms (5^m5), sand, extends about one mile offshore for 3 $\frac{1}{2}$ miles north-westward of Chirū point ; it is marked by discoloured water. Bandar Mansūri is an anchorage used by native craft on this bank from 2 to 3 miles westward of Chirū point, but it affords indifferent shelter during easterly winds.

Jazeh, a table-topped hummock about 800 feet (243^m8) high, lies about 8 miles north-westward of Chirū point and 3 $\frac{1}{2}$ miles inland ; from southward it is fairly conspicuous. All the hills in this locality are light in colour.

50 Makāhil and Jazeh are small fishing villages on the coast about 13 and 14 $\frac{1}{4}$ miles, respectively, north-westward of Chirū point ; there is a tower in each village and some trees near them. The anchorage off these villages is quite open and the coast is steep-to.

Ras Nakhilū is low and ill-defined ; close northward of it are some

Chart 748b.

Chart 2830.

sand hills. A bank, over which there are depths of less than 3 fathoms (5^m5); extends about 8 cables south-westward from the point.

OFF-LYING ISLANDS.—Off the coast of Shibkūh, between Chārak and Ras Nakhīlū, are several islands and banks, on the south-westernmost of which latter there is a dangerous shoal. 5

Jazirat Qais.—**Light.**—Jazirat Qais, lying about 9 miles offshore southward of Gurzeh, rises to a plateau, about 120 feet (36^m6) high; being light brown in colour it is difficult to distinguish at night.

A light (*Lat. $26^{\circ} 31' N.$, Long. $53^{\circ} 59' E.$*) is exhibited, at an elevation 10 of 89 feet (27^m1), from a white steel structure, 33 feet (10^m1) in height, situated on the southern side of Jazirat Qais.

The coasts of the island are low and consist of sandy beaches between rocky points; but the eastern and western extremities are low cliffs. There are many trees on the island and several villages stand on its 15 northern side.

Reefs, in most places steep-to, fringe the coasts of the island but nowhere do they extend for a greater distance than one mile offshore. A small detached bank, with a depth of 14 fathoms (25^m6) over it, was reported, in 1922, to lie about $2\frac{1}{2}$ miles eastward of the eastern 20 extremity of the island. Foul ground extends about half a mile off the southern and western coasts of the island, with depths of 6 and 8 fathoms (11^m0 and 14^m6) close outside it; beyond this the depths increase rapidly.

Chart 2837a, plan of Qais anchorage.

25

Safil, a small village, is situated about three-quarters of a mile south-westward of the northern point of Jazirat Qais; this point is cliffy and about 15 feet (4^m6) high. At low water, landing at the village is bad, for a reef dries off it for about a quarter of a mile; the edge of the foul ground lies about 7 cables offshore northward of the 30 village.

Dih, about $1\frac{1}{4}$ miles westward of North-east point, is a small village at which there are date groves. North-east point is low and sandy with a conspicuous fort with two towers on it. A sandy spit extends about $6\frac{1}{2}$ cables north-north-eastward from the point; there are 35 depths of $3\frac{1}{2}$ fathoms (6^m4) over its outer part, and within 3 cables of the point there are depths of less than 3 fathoms (5^m5); the edge of the spit is steep-to.

Māsheh village extends about one mile along the shore of the bay of the same name southward of North-east point; a conspicuous tree 40 stands about half a mile inland abreast the southern end of the village. East point, the southern entrance point of Māsheh bay, and the eastern extremity of the island, is a cliff about 6 feet (1^m8) high, with a ruined tower on it, from which foul ground extends about 7 cables northward. 45

Anchorage.—Directions.—The best anchorage at Jazirat Qais is off the northern part of Māsheh village, eastward of North-east point.

In summer, when shelter from the shamāl is often required, vessels should anchor, in depths of from 8 to 9 fathoms (14^m6 to 16^m5), mud, 50 with the fort on North-east point bearing between 283° and 294° .

In winter, anchorage may be obtained in the above position or northward of North-east point, in a depth of 10 fathoms (18^m3), with

Charts 2837a, 748b.

Chart 2837a, plan of Qais anchorage.

the fort on North-east point bearing 180° , distant about three-quarters of a mile. The latter position is partially sheltered from the shamāl, which in this locality blows from westward.

5 Anchorage may also be obtained, in a depth of 8 fathoms ($14^{\text{m}6}$), about $1\frac{1}{2}$ miles offshore on the northern side of the island, but it is exposed to the prevailing winds.

Chart 2830.

The tidal streams in the passage between Jazirat Qais and the 10 mainland are reported to be strong and very irregular; in the offing they are weak.

A vessel passing northward of Jazirat Qais should not close the island to a distance of less than 2 miles unless proceeding to an anchorage. The passage northward of the island is not recommended at night unless 15 the island can be seen.

Sambarun bank.—This bank, with a least depth of 6 fathoms ($11^{\text{m}0}$), and steep-to, lies $7\frac{1}{2}$ miles southward of Chirū point (page 136).

Jazirat Hindarābi.—**Anchorage.**—**Caution.**—This island, the eastern extremity of which lies $4\frac{1}{2}$ miles west-south-westward of Chirū 20 point (*Lat. $26^{\circ} 41' N.$, Long. $53^{\circ} 45' E.$*), rises gradually to an elevation of about 100 feet ($30^{\text{m}5}$); it is brown in colour and difficult to distinguish at night. The eastern and western points of the island are low cliffs, and about a quarter of a cable off the western point there is a flat detached rock, about 10 feet ($3^{\text{m}0}$) high. There is a village near 25 the middle of the northern coast, near which are a few trees and some cultivation.

The island is fringed for its greater part by a reef, and on its northern side it extends about a quarter of a mile offshore, making landing at the village bad at low water; off the north-eastern and eastern coasts, 30 the reef is a little wider and is steep-to; on the southern side of the island it probably extends about one mile offshore, and is steep-to. A bank, with depths of less than 6 fathoms ($11^{\text{m}0}$), extends about a mile westward from the western end of the island.

Anchorage may be obtained off the village, in depths of from 6 to 35 8 fathoms ($11^{\text{m}0}$ to $14^{\text{m}6}$), rock; but it is open to the shamāl.

A current is reported sometimes to set towards Hindarābi and the coast in its vicinity; caution is therefore necessary at night.

The tidal stream is strong northward of the island, but weak in the offing.

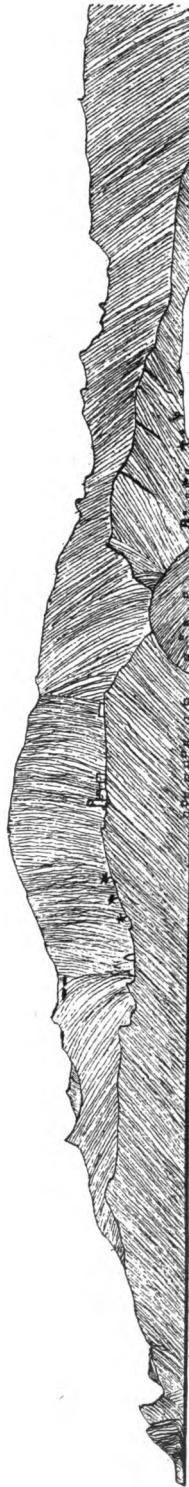
40 Charts 2837b, plan of Sheikh Shu'aib anchorage, 2830.

Jazirat Shitvär.—Jazirat Shitvär (Shatvär) lies about three-quarters of a mile east-south-eastward of the eastern end of Jazirat Shaikh Shu'aib and about $4\frac{1}{2}$ miles south-westward of Ras Nakhilū (page 136). It appears to be fringed with reefs to a distance of about

45 $1\frac{1}{2}$ cables offshore, and a shoal, over which there are depths of less than 6 fathoms ($11^{\text{m}0}$), extends about one mile southward and the same distance eastward from it. There is a small detached bank with a depth of 9 fathoms ($16^{\text{m}5}$), about $3\frac{1}{2}$ miles east-south-eastward of the island.

50 **Jazirat Shaikh Shu'aib.**—**Dangers.**—This island, the eastern end of which lies about 6 miles west-south-westward of Ras Nakhilū, is brown in colour and its eastern and western extremities are low but thence it rises to a number of hummocks having an elevation of about 120 feet ($36^{\text{m}6}$) (see view facing this page). A conspicuous high and

Charts 2837a, b, 748b.



Fort,
bearing 342°,
about 11 miles.

Kalat al Abeid village from south-south-eastward.

(Original dated 1916.)



Western point,
bearing 355°,
11 miles.

Jazirat Shaikh Shu'aib and Jazirat Shitvār from southward.

(Original dated prior to 1915.)

Jazirat Shaikh Shu'aib.

Jazirat Shitvār.



'Ayānāt village.

Jahāt Siri' Ayānāt,
bearing 082°,
4½ miles.

Coast in the vicinity of 'Ayānāt village from south-south-westward.

(Original dated 1916.)

Charts 2837b, plan of Sheikh Shu'aib anchorage, 2830.

square tower stands in the village of Laz (see below) near the eastern end of the island. In the middle of the island there is a valley in which are four small villages.

The low eastern point of the island consists of sand, but the south-eastern point, about 4 cables south-south-westward, is a cliff about 20 feet ($6^{\text{m}}1$) high. 5

A narrow spit, with a depth of 2 fathoms ($3^{\text{m}}7$), extends about half a mile from the eastern extremity of the island, thence the depths increase gradually eastward. 10

In the fairway of the channel between Jazirat Shaikh Shu'aib and Jazirat Shitvär there is a depth of $2\frac{1}{2}$ fathoms ($4^{\text{m}}6$) ; the best course through was reported in 1912 to be from a position about 3 cables off the south-eastern extremity of Jazirat Shaikh Shu'aib to a position about $2\frac{1}{2}$ cables north-westward of Jazirat Shitvär, but caution is 15 necessary as the channel has not been examined.

About $4\frac{1}{2}$ miles westward of the cliff, 20 feet ($6^{\text{m}}1$) high, is a low sandy point, on which stands the village of Qurat (Kurat), with a tower and a large grove of trees. Between Qurat and the western extremity of the island, the coast consists mostly of rocky cliffs ; the western 20 extremity is also rocky, and is from 6 to 10 feet ($1^{\text{m}}8$ to $3^{\text{m}}0$) high.

The southern coast of Jazirat Shaikh Shu'aib is fringed by a reef which extends about one cable offshore. A bank, with depths of less than 6 fathoms ($11^{\text{m}}0$), extends about one mile westward from the western extremity of the island. 25

About 2 miles eastward of the western extremity of the island, on the northern side, there is a small bight which affords good landing ; thence to the eastern end of the island, the coast is bordered by cliffs with one or two sandy bights. A reef which extends from one to 2 cables offshore, fringes the northern coast. 30

Räs (*Lat. $26^{\circ} 50' N.$, Long. $53^{\circ} 11' E.$*), a village at which there is a round tower and also a few trees, is situated about $1\frac{1}{2}$ miles eastward of the western extremity of the island. Dekhtün and Laza are small villages, situated, respectively, about $6\frac{1}{2}$ and 7 miles eastward of Räs ; in the eastern of the two villages, there is a tower. Laz, the principal 35 village in the island, stands on a small rocky point on the northern coast about one mile from its eastern end ; southward of it are numerous large round trees and a few date palms.

Anchorage. — Directions. — Tidal streams. — During south-easterly winds, sheltered anchorage might be obtained off the eastern 40 end of Jazirat Shaikh Shu'aib, in depths of from 4 to 7 fathoms ($7^{\text{m}}3$ to $12^{\text{m}}8$), sand and rock, about half a mile offshore north-eastward of Laz village ; but it would be necessary to put to sea on the approach of a shamál for in this locality that wind blows from west-north-westward. 45

Shelter from the shamál can be obtained southward of the eastern end of Jazirat Shaikh Shu'aib, in a depth of about 8 fathoms ($14^{\text{m}}6$), from 3 to 5 cables offshore between Qurat village and Jazirat Shitvär, but the locality has been only partially examined.

Anchorage, well sheltered from the shamál, and to some extent from easterly winds also, may be obtained in the channel between Jazirat Shaikh Shu'aib and Jazirat Shitvär, in a depth of about 3 fathoms ($5^{\text{m}}5$), sand and rock, but the holding ground of decaying coral is very bad and the anchorage is not recommended ; vessels using it should 50

Charts 2837a, 748b.

Charts 2837b, plan of Sheikh Shu'aib anchorage, 2830.

approach from southward and anchor rather nearer the western side of the channel, with the tower at Laz in line with the low eastern point of Jazirat Shaikh Shu'aib.

5 Jazirat Shaikh Shu'aib is exceedingly difficult to distinguish at night or in hazy weather, and sounding is of little use when approaching it.

When passing between Jazirat Shaikh Shu'aib and the mainland, the coast in the vicinity of Ras Nakhilū should not be approached into depths of less than 15 fathoms (27^m4). Caution is necessary as

10 the tidal streams set across the channel and run strongly between Jazirat Shaikh Shu'aib and Jazirat Shitvār, causing a ripple on the spit extending from the eastern end of the former.

The tidal streams in the channel, between Jazirat Shaikh Shu'aib and Jazirat Shitvār, set north-north-eastward and south-south-westward; between the islands and the mainland they are strong, but in

15 the offing they are weak.

Between positions about 5 miles westward of Stiffe bank and 40 miles westward of Shah Allum shoal (*see below*), a southerly set of one knot was experienced during a shamāl in March, 1940.

20 Chart 2830.

OUTLYING BANKS.—Light-vessel.—Fog signal.—Shoal.—Stiffe bank (*Lat. 26° 26' N., Long. 53° 09' E.*), with a least depth of 15 fathoms (27^m4), sand, shells, and coral, lies about 27 miles south-westward of Jazirat Hindarābi.

25 A light-vessel, painted red, with "Stiffe bank" in white letters on her sides, and exhibiting a light, at an elevation of 32 feet (9^m8), from a lantern on a black mast, is moored on Stiffe bank. A fog signal is sounded from the light-vessel.

A bank, which has not been examined and the position of which is 30 approximate, was reported, in 1936, by the s.s. *British Judge* in a position about 39 miles southward of the western end of Jazirat Shaikh Shu'aib; the least depth obtained was 14 fathoms (25^m6) and the extent of the bank is at present unknown.

Shah Allum shoal, is a small dangerous rocky patch lying about 35 42 miles south-westward of the western extremity of Jazirat Shaikh Shu'aib, and the least-known depth over it is 2 fathoms (3^m7). It is steep-to, and lies near the northern end of a bank over which the general depths are less than 20 fathoms (36^m6). No discolouration of the sea has been observed and the shoal cannot be seen from aloft;

40 some white birds are, however, usually hovering over it.

In 1938, during a strong shamāl, the shoal was observed to be breaking and was clearly defined at a distance of 1½ miles, and pale green discolouration extended southward.

Cable bank, with a least known depth of 14 fathoms (25^m6), lies 45 about 35 miles west-south-westward of the western extremity of Jazirat Shaikh Shu'aib.

COAST.—About 4 miles northward of Ras Nakhilū (page 136) is the village of the same name, near which is a large grove of trees.

Anchorage, sheltered from easterly winds but open to the shamāl, 50 may be obtained off Nakhilū and the coast northward of it.

Chart 2837a, plan of Mugam.

Mugām.—Anchorage.—About 3½ miles northward of Nakhilū

Charts 2837a, b, 748b.

Chart 2837a, plan of Mugam.

is the large village of Mugām, about a quarter of a mile northward of which is a large square fort. About $1\frac{1}{2}$ miles north-westward of the fort, a conspicuous triangular cliff, about 165 feet ($50^{\text{m}}3$) high, stands about 4 cables inland. A bank, over which there are depths of less than 3 fathoms ($5^{\text{m}}5$), extends about 8 cables offshore abreast and north-westward of the village. 5

Anchorage may be obtained, in a depth of 6 fathoms ($11^{\text{m}}0$), mud, with the fort bearing 058° , distant about 13 cables, or close off the edge of the bank, in a depth of about 4 fathoms ($7^{\text{m}}3$), with the fort 10 bearing 063° , distant about one mile.

Chart 2830.

Coast.—Between Mugām and Shīvūh, about 19 miles west-north-westward, there is a coastal range of hills, which rises steeply to a height of from 200 to 300 feet ($61^{\text{m}}0$ to $91^{\text{m}}4$), and over which can be seen the summits of another range, from 4,000 to 5,000 feet ($1219^{\text{m}}2$ to $1524^{\text{m}}0$) high, which runs parallel with it, and about 12 miles inland. North-eastward of Mugām, there is a fall or dip in the coastal hills which is conspicuous. 15

Bandar Basatin, about $4\frac{1}{2}$ miles west-north-westward of the fort 20 at Mugām (*Lat. $26^{\circ} 58' N.$, Long. $53^{\circ} 29' E.$*), is a small bay, the low point at the western end of which projects from rocky hills; near the point are some birkehs and from it a spit extends about half a mile offshore. The position of the bay may be identified by a low, jagged, light-coloured ridge of rock which, in line with a peak 4,870 feet 25 ($1484^{\text{m}}4$) high (chart 2837a), bearing 033° , leads to its western point.

Anchorage may be obtained about half a mile eastward of the point though it is but little sheltered from the shamāl, which in the vicinity blows from westward or west-north-westward. Small vessels might anchor with the point bearing 270° ; larger vessels should anchor 30 as close inshore as their draught permits; there is a depth of about 10 fathoms ($18^{\text{m}}3$) at a distance of about one mile offshore.

About $2\frac{1}{2}$ miles eastward of Shīvūh there is a fairly conspicuous saddle-shaped hill about 400 feet ($121^{\text{m}}9$) high, and about 9 miles north-north-eastward is a mountain, known as the Paps, which is fairly 35 conspicuous, especially from westward, and is a useful mark.

Chart 3599, plan of Shīvūh.

Shīvūh.—Light.—Anchorage.—This village is situated on the eastern point of a small shallow indentation in the coast; in the village there is a large square white mosque, close eastward of which 40 there is a fort; about half a mile east-south-eastward of the village, there is a peaked hill from 200 to 300 feet ($61^{\text{m}}0$ to $91^{\text{m}}4$) high.

A light is exhibited occasionally from a flagstaff at the Custom house.

There is a small boat harbour, with a depth of $1\frac{1}{2}$ feet ($0^{\text{m}}5$), formed by a flat black rocky ledge, at the south-eastern end of the village. 45

Gill rock, 4 feet ($1^{\text{m}}2$) high, lies $2\frac{1}{2}$ cables west-north-westward of the flagstaff of the Custom house.

Anchorage may be obtained, in a depth of about 5 fathoms ($9^{\text{m}}1$), sand, about a quarter of a mile off the black rocky ledge. In 1911, H.M.S. *Philomel* found this anchorage to be good even when the shamāl was blowing; although there was a swell which rendered landing impossible, it was much less than that experienced at other open anchorages. The tidal streams were weak and she lay with her head to the wind. 50

Charts 2837a, b, 748b.

Chart 3599, plan of Shívuh.

When practicable, the best landing place is in the boat harbour.
Chart 2830.

Coast.—About 2 miles westward of the Custom house at Shívuh there is a rocky point from which the hills rise steeply. About one mile farther westward is Bandar Kalátu, which affords good shelter to small craft with local knowledge during a shamál, and gives better protection to a vessel of moderate size than does the anchorage off Shívuh. Vessels should anchor about $2\frac{1}{2}$ cables from the point and as far inshore as the draught permits.

The coast, for about 5 miles westward of Kalátu, is indented and in most places cliffy; from the small sandy bays the hills rise steeply; there are a number of boat anchorages, close inshore sheltered from the shamál. Ziyárat and Buraghleh are small villages, in each of which are two birkehs, situated respectively, about $1\frac{1}{2}$ and $2\frac{1}{2}$ miles west-north-westward of Kalátu.

Bustánu (*Lat. $27^{\circ} 06' N.$, Long. $53^{\circ} 02' E.$*) is a village, situated at the head of a small bay, about one mile north-westward of Buraghleh. A ridge of grey-coloured rock, about 100 feet ($30^{\text{m}} 5$) high, runs down to the coast close eastward of the village and on its southern end is a tower. Northward of the village there is a small creek navigable by dhows, but its entrance is difficult to identify.

Anchorage, probably the best in the vicinity, may be obtained off Bustánu, in a depth of 7 fathoms ($12^{\text{m}} 8$), about 6 cables from the village; there are depths of 5 fathoms ($9^{\text{m}} 1$) about $2\frac{1}{2}$ cables offshore and 2 fathoms ($3^{\text{m}} 7$) one cable from the beach.

The anchorage is well protected from the shamál and, in February, 1924, H.M.S. *Crocus* rode out a strong kaus without dragging. A considerable surf runs inshore, but safe landing can be effected at the south-eastern end of the village by steering for the centre of the latter and when clear of the breakers steering south-eastward parallel with the coast; smooth water is obtained inside a reef which extends about 80 yards ($54^{\text{m}} 9$) west-north-westward from the south-eastern end of the village.

Sháhín kúh, about $2\frac{1}{2}$ miles north-eastward of Bustánu, is a remarkable mountain with precipitous sides; it is flat-topped and its southern bluff is about 1,100 feet ($335^{\text{m}} 3$) high. See views B and C on chart 2837b.

Kharábeh and Dastúr are two small settlements situated close together within 2 miles westward of Bustánu. 'Amárieh is a small fishing village on a hill about $5\frac{1}{2}$ miles north-westward of Dastúr. Tibin is a small village about $5\frac{1}{2}$ miles north-westward of 'Amárieh; it is situated in a small bay and, except for one square hut, is scarcely noticeable from seaward. Close south-eastward of the village there is a conspicuous brown slope, 380 feet ($115^{\text{m}} 8$) high. It is reported that, in the vicinity, there is a bight in the coast, and about one mile northward of the village there is a small creek, open south-eastward, which affords shelter to dhows; it is not visible from seaward.

Charts 2837a, b.
50 The coast between Tibin and Ras Nábánd, about 15 miles north-westward, is bold, steep-to, and rocky with low cliffs; there are no anchorages or shelter. There are several villages on this stretch of coast, the positions of which may best be seen on the chart.

Ras Nábánd is faced with a rocky cliff about 10 feet ($3^{\text{m}} 0$) high;

Charts 2837a, 748b.

Charts 2837a, b.

south-eastward of the point the land rises gradually to the summits of white precipitous flat-topped cliffs, from 60 to 80 feet (18^m3 to 24^m4) high. About half a mile inland of the point there is a large date grove, and about 3 miles south-eastward of it is a conspicuous solitary tree standing on a high tableland. The western side of the point is steep-to, the depths increasing gradually to 30 fathoms (54^m9) about 3 miles offshore. A bank, with depths of less than 3 fathoms (5^m5), extends about half a mile northward and $2\frac{1}{2}$ miles north-eastward from the point. 10

The tidal streams in the vicinity and in Nāband bay are very weak.

Nāband bay.—Dangers.—Nāband bay is entered between Ras Nāband (*Lat. $27^{\circ} 23' N.$, Long. $52^{\circ} 35' E.$*) and a low point situated about 5 miles north-north-eastward. The head of the bay is shallow, depths of 3 fathoms (5^m5), mud, extending about 2 miles offshore. 15

A small rocky patch, over which there is a depth of 3 fathoms (5^m5), lies about $1\frac{1}{2}$ miles south-westward of the northern entrance point of the bay; it is steep-to and does not show up well.

Gābandī valley extends about 35 miles east-south-eastward from the head of the bay, between the coastal hills and the mountain range 20 behind them. On its northern side, the hills are of considerable height and fairly precipitous; about 15 miles eastward of the head of the bay there is a bluff, about 3,600 feet (1097^m3) high, which is conspicuous from north-westward.

The southern shore of the bay is low and rocky, and behind it the 25 coastal hills rise to a moderate height; the shore at the head is low, sandy, and in places swampy.

Nāband or Hālat, a village with several conspicuous trees on either side of it and a square fort at its western end, stands on the southern shore about $2\frac{1}{2}$ miles within Ras Nāband, and between them 30 is a point from which a reef extends about half a mile, affording shelter to boats from the shamāl.

A reef extends about a quarter of a mile from the northern entrance point of the bay. Eastward of it there is a sandy point from which a reef extends about one cable, and for a distance of about 2 miles 35 eastward of this point, the shore is low and swampy, and intersected by mangrove creeks. Small craft with local knowledge may obtain anchorage at Bandar Baidheh Khān, eastward of the sandy point mentioned above. During a shamāl, these craft anchor in a depth of $2\frac{1}{2}$ fathoms (4^m6) or less, but the shelter is indifferent. 40

Baidheh Khān village lies about one mile inland of the northern shore, about $2\frac{1}{2}$ miles eastward of the northern entrance point, and is nearly hidden in a grove of trees.

Anchorages.—Directions.—Anchorage anywhere in Nāband bay is sheltered from the kaus, but, with the exception of the boat anchorages, is exposed to the shamāl, and when the latter is blowing a heavy sea rolls into the bay. 45

Anchorage may be obtained, in a depth of 6 fathoms (11^m0), with Nāband village, bearing between 135° and 180° , distant about one mile; the holding ground is, however, reported to be bad. 50

Anchorage, reported to be partly sheltered from the shamāl, may be obtained, in a depth of 3 fathoms (5^m5), with good holding ground, with a square house westward of Baidheh Khān village bearing 019° , and a tower, situated about $2\frac{1}{2}$ miles south-eastward of the village, bearing 086° . 55

Chart 748b.

Charts 2837a, b.

Landing can be effected anywhere in the bay except in northerly or westerly winds, which raise a heavy surf.

The passage between the 3-fathom (5^m5) patch situated $1\frac{1}{2}$ miles off ⁵ the northern entrance point and the reef off that point is about one mile wide, but it should not be used ; by far the better entrance, which is about 2 miles wide, is that between the patch and the reef off Nāband village.

Coast.—Aspect.—Between the northern entrance point of Nāband ¹⁰ bay and Banak, about 40 miles north-westward, there is a coastal range of mountains, the seaward side of which appears to be precipitous ; at times the fires of the charcoal burners are visible high up in the mountains. Date groves extend from close north-westward of the northern entrance point of Nāband bay to beyond 'Asalū, about one ¹⁵ mile from the point.

Jabal Sir-i-Yalfal, about 6 miles northward of the northern entrance point of Nāband bay, is a summit in the coastal range, 4,870 feet (1484^m4) high, which appears as a great step, except from westward when it looks like a sharp notch. *See* views A, C, E, and F on chart ²⁰ 2837b.

Jabal Siri ('Ayanat), about 28 miles north-westward of Jabal Sir-i-Yalfal (*Lat. 27° 33' N., Long. 52° 38' E.*) and about 5 miles inland, is a conspicuous barn-shaped peak, 4,660 feet (1420^m4) high, on a long level-topped part of the range, which part terminates about 17 miles ²⁵ farther north-westward, in a great step ; from westward the peak appears to be small. (*See* views A, C, F, and H on chart 2837b, and facing page 138). When close inshore, Jabal Siri is obscured from view by a lower coastal range which commences about 12 miles south-eastward of it and increases in height north-westward beyond Banak.

'Asalū.—Anchorage.—There is a large date grove behind 'Asalū village, and a conspicuous, though partially destroyed, round tower stands on a hillock north-westward of it.

A reef extends over half a mile offshore for a distance of about $3\frac{1}{2}$ miles north-westward of the northern entrance point of Nāband ³⁵ bay ; there are depths of 5 and 6 fathoms (9^m1 and 11^m0) close outside the reef which should not be approached into a depth of less than 7 fathoms (12^m8). Boats pass over the reef and shelter close to the village in depths rather greater than those over the reef.

Anchorage off the village is open to the shamāl ; the holding ground ⁴⁰ is poor, and it is necessary to approach with caution as the shore reef is very steep-to.

Coast.—Anchorage.—Nakhl Taqi (Tagi), about 2 miles north-westward of 'Asalū, is a small village at which there is a fort and a tower ; there are some date trees in the vicinity and two or three large ⁴⁵ round trees stand between the village and 'Asalū.

A reef, close outside which there are depths of 8 fathoms (14^m6), extends about a quarter of a mile offshore, and caution should be exercised when approaching it.

Barak, about 13 miles north-westward of Nakhl Taqi, is a small ⁵⁰ village with a fort, a square tower, and a date grove. The coast between these villages rises steeply to the hills and is nearly steep-to, there being little or no coastal reef. About $2\frac{1}{2}$ miles south-eastward of Barak there is another small village, in which there is a square tower. About 2 miles westward of Barak there is a low point which affords

Charts 2837a, b.

partial shelter from the shamāl to boats anchored off the village. A shoal, with depths of from 2 to 3½ fathoms ($3^{\text{m}}7$ to $6^{\text{m}}4$), extends about one mile south-south-eastward from this point, and is steep-to.

Tāhiri village is situated on the shore of Tāhiri bay, about 3½ miles north-westward of Barak (*Lat. 27° 39' N., Long. 52° 24' E.*), and extends some way up the side of the coastal hills which there rise from the head of the bay to an elevation of about 700 feet (213^m4). Two forts, neither of which are conspicuous, stand at the eastern end of the village and about half a mile eastward of them are three large round conspicuous trees. On the foreshore, in the middle of the village, are two white mosques about 1½ cables apart, and on a small hill westward of the village there is a large fort with a square wind-tower, near which is a large conspicuous round tower with a white band near its top and a flagstaff. The north-western entrance point of the bay, about one mile westward of the village, is low and almost steep-to; near it are some date groves. The depths in the bay shoal gradually from 8 fathoms ($14^{\text{m}}6$) about half a mile offshore.

Anchorage, partially sheltered from the shamāl but exposed to the kaus, may be obtained, in a depth of about 6 fathoms ($11^{\text{m}}0$), with good holding ground, close offshore with the western entrance point of the bay bearing about 284° .

Chart 2837b.

The coast between Tāhiri and Banak, about 21 miles north-westward, is fairly steep-to and may be approached to a distance of about half a mile. Akhtar (Achar), about 4 miles north-westward of Tāhiri, is a small village almost hidden in date groves, but it has a large round conspicuous mosque in the middle of it. Anchorage, exposed to the kaus, may be obtained, in a depth of 11 fathoms ($20^{\text{m}}1$), with good holding ground, about half a mile south-westward of the mosque.

Ras Akhtar and Ras Aswad are two slightly projecting points about 2 miles west-north-westward of Akhtar, between which there is a bight in which boats can anchor sheltered by the latter point. 'Ayānāt, about 3½ miles north-westward of Akhtar, is a village, with a few trees interspersed amongst the houses, and date groves at either end of it. A tower stands at the western end of the village. See view facing page 138.

Two reefs, marked by breakers, lie one on each side of 'Ayānāt and form a boat harbour; they extend parallel with the coast from a half to three-quarters of a mile offshore; the western reef is about 1½ miles in length and the eastern reef one mile. The channel between the reefs is about half a mile wide. The landing is good. Dhows anchor inside the reefs.

Anchorage, open but reported to be moderately good during a shamāl, may be obtained off 'Ayānāt, in a depth of 10 fathoms ($18^{\text{m}}3$).

About 3½ miles north-westward of 'Ayānāt is Miānlū (Miyālu) village, in which there is a fort standing on an elevation. About 5 miles farther north-westward is Ras al Marrar, a low point, from which rocks extend about half a cable. Kangān (Kangun), about 2 miles north-westward of Ras al Marrar, is an important town standing on a sandy beach; there is a tower at its northern end, and a large date grove is situated about half a mile north-westward of it.

Anchorage may be obtained off Kangān, in a depth of 5 fathoms

Chart 748b.

Chart 2837b.

(9^m1) from a half to three-quarters of a mile offshore ; the anchorage is partially sheltered from the shamāl, which, in this locality, blows from north-westward, but some swell rolls in from west-south-westward ; it is exposed to the *kaus*.

COAST OF DASHTI.—Aspect.—The coast of this district extends about 23 miles westward from a position close westward of Banak, situated about 3 miles north-westward of Kangān, and thence about 40 miles north-westward to Qalāt (Kalat).

10 *Jabal Sat-Heh*, which extends north-westward from *Jabal Sir-i-Yalfal* (see page 144), continues north-westward and at distances of about 8 and 11 miles, respectively, from that landmark are two conspicuous castle-shaped mountains with almost vertical sides and projections resembling bastions ; situated about 12 miles farther north-
15 westward is a rounded mountain, about 4,000 feet (1219^m2) high, on the sides of which streaks of salt deposit glisten when the sun shines upon them ; from this mountain, the range trends in a north-north-westerly direction.

In the vicinity and north-westward of Kangān (*Lat. 27° 49' N., Long. 20° 52° 04' E.*) is a coastal range, from 2,000 to 3,000 feet (609^m6 to 914^m4) high, which appears at a distance to form part of the main range but which obscures the latter from view when close inshore ; the mountains forming it are rugged, precipitous, and are very irregular in outline.

A valley extends north-westward from the coast westward of Banak
25 and separates the foregoing mountain ranges from a detached group of mountains between them and the sea. *Kūh-i-Dirang* (*Jabal Direng*) is the summit of this group and rises to an elevation of 3,270 feet (996^m8), at its northern end, about 25 miles north-westward of Banak ; according to the direction from which it is seen, the mountain appears
30 either as one peak or surmounted by from three to five hummocks of equal height. From south-westward the hummocks are in line and a great bluff appears on the northern side of the mountain. *See* views D, F, H, and I on chart 2837b.

Funnel hill, towards which the mountains forming the group decrease
35 in elevation, is situated on the south-western side of the group about 13 miles south-south-eastward of the central summit of *Kūh-i-Dirang* and about 3 miles inland ; it is table-topped, about 800 feet (243^m8) high, and on it is a small natural pillar that is a good landmark.

Northward of this group of mountains lies an extensive low, swampy
40 plain.

Coast.—Anchorage.—For about 7 miles westward of Banak the coast is low and sandy.

Bardistān, about 5 miles north-westward of Banak and about 2 miles inland, is a town at which there is a tall bād-gīr, or wind-tower, which
45 is partly hidden by trees. It stands near a creek, the mouth of which is situated about 2½ miles south-eastward. During rains the creek becomes the mouth of the water-course which drains the valley.

About 7 miles westward of Banak is Daiyir, a small town, in which there is a square fort with two towers, and also some round trees ;
50 eastward of the village there is a large date grove. The Shaikh's house, a white two-storied building with a small flagstaff, stands near the fort. A remarkable isolated rock of light grey colour, and from 60 to 80 feet (18^m3 to 24^m4) in height, stands about one mile westward of the town

Chart 748b.

Chart 2837b.

and about three-quarters of a mile inland; it has the appearance of a square tower and can be identified from some distance.

Excellent anchorage, affording far better protection from the shamāl than that off Kangān, but exposed to the kaus, may be obtained off Daiyir, in a depth of 4 fathoms (7^m3), with the fort, bearing 000°, distant about half a mile; large vessels should anchor farther out, in depths of from 8 to 10 fathoms (14^m6 to 18^m3), mud. 5

Landing is difficult unless the boat is able to cross a reef which extends from one to 2 cables offshore abreast Daiyir. 10

At springs, the tidal streams attain a rate of from one to 2 knots at the anchorage off Daiyir (*Lat. 27° 50' N., Long. 51° 54' E.*).

A small rocky point, consisting of low cliffs, projects from the coast about 2½ miles westward of Daiyir, and about one cable off it are some sunken rocks, within which there is a landing place. In the vicinity 15 of the point, and for a distance of about 7 miles westward of it, the hills descend to the coast. Anchorage may be obtained, in a depth of 6 fathoms (11^m0), about half a mile off this point. About 9 miles westward of Daiyir is Batūneh village, off which there is anchorage, but it is exposed both to the shamāl and the kaus. About 10 miles 20 westward of Batūneh is Ras Umm-al-Karam, and 27 miles north-westward of the latter is Kabgān at the mouth of Münd river. Between Batūneh and Kabgān there are several date groves, but there are no villages. This stretch of coast is bordered by extensive swamps and fronted by shoals and cannot be approached. 25

Islets and dangers.—Jazīrat Umm-al-Karam, known to the natives as Qurma, is a low islet lying about one mile south-westward of Ras Umm-al-Karam. About 4 miles north-westward of the same point is Umm Silā, a low sandy islet, lying about one mile offshore. 30

Nakhilū is a low islet lying about 5 miles westward of Jazīrat Umm-al-Karam; in the middle of the islet is the tomb of a shaikh, a square building of loose stones; a cairn, about 5 feet (1^m5) high, stands on the north-eastern extremity of the islet. From a position close off Nakhilū, some date groves on the coast of the mainland are just visible. 35

Ras-al-Mutāf, about 12 miles south-eastward of Nakhilū, is the south-western extremity of a shoal which extends about 19 miles in that direction from the islet, and which appears to consist of sand over a rocky foundation; the shoal is almost dry for many miles from its north-western end, but its eastern end is covered. In 1892, it was reported by H.M.S. *Sphinx* that the shoal probably extends farther 40 westward and southward than charted. In 1912 H.M.S. *Espiegle* reported a 2-fathom (3^m7) patch southward of Ras-al-Mutāf in a position about 13½ miles south-south-eastward of Funnel hill (page 146), and, in 1939, a sand bank, almost awash, was reported to lie about 15½ miles south-westward of the same hill. 45

A bank, with a depth of 8 fathoms (14^m6), lies about 22 miles south-westward of Funnel hill. Shoal water, in which the bottom was plainly visible, was reported, in 1917, in a position about 33 miles south-westward of the hill.

Khōr Khān is a channel, inside the shoals of which, Ras-al-Mutāf 50 (*Lat. 27° 43' N., Long. 51° 38' E.*) is the south-western extremity; its principal entrance is northward of the eastern end of the shoals and in which there are depths of from 4 to 9 fathoms (7^m3 to 16^m5). The channel continues north-westward for about 7 miles beyond

Chart 748b.

Chart 2837b.

Nakhilū, but there is no outlet at its north-western end. The channel is used by small native craft which are able to leave it by a channel close northward of Nakhilū, in which there are depths of 2 fathoms 5 (3^m7) at high water. The cairn on Nakhilū in line with the shaikh's tomb leads through Khör Khān. Shoals extend from 2 to 3 miles from the mainland shore of Khör Khān, but a channel, in which there is reported to be a depth of 10 fathoms (18^m3), leads westward through them and passes inside Jazirat Umm-al-Karam.

10 Jazirat Jābrin, known to the natives as Tahmādu and its south-eastern extremity as Ras Tahmādu, lies about 4½ miles north-westward of Nakhilū ; it is a low narrow strip of sand with tufts of grass on it ; it is uninhabited, but is frequented by flamingoes, pelicans, and curlew. Between Ras Tahmādu and Nakhilū is the boat channel into Khör

15 Khān. Eastward of Jazirat Jābrin there is an extensive swamp intersected by deep creeks, the mainland being distant about 5 miles ; this swamp continues northward almost to Kabgān.

Anchorages.—Directions.—Tidal streams.—Anchorage may be obtained, by vessels with local knowledge, in depths of 4 or 5 fathoms 20 (7^m3 or 9^m1), off the eastern end of the shoal of which Ras-al-Mutāf is the south-western extremity, with Funnel hill bearing 330° and Jabal Siri, 073°. This anchorage is sheltered from the shamāl but exposed to the kaus. As there is no good shelter from the shamāl between this anchorage and Bushire, more than 90 miles northward, it is resorted to 25 by vessels caught by a north-westerly gale off that part of the coast.

When rounding the shoal vessels should not approach within depths of less than 11 or 12 fathoms (20^m1 or 21^m9) ; and at night, or in thick weather, it should not be approached within depths of less than 15 fathoms (27^m4). By day, the discolouration, which extends some 30 miles off the shoal, into considerable depths, is a good guide.

As the coast from Nakhilū almost to Kabgān is extremely low, caution is necessary when in its vicinity, especially at night, or in thick weather, a vessel should not approach within depths of less than 14 fathoms (25^m6).

35 The tidal streams are reported to set westward and eastward over the shoal ; and south-westward of it they appear to set north-westward and south-eastward. A perceptible indraught into the bay eastward of Ras-al-Mutāf has been observed on several occasions, during the south-east-going tidal stream. At springs these streams attain a rate 40 of about 2 knots ; both in the channels inside the shoals and along their outer edge they are reported to be strong.

Coast.—Anchorages.—Buoy.—Ras Jābrin, close northward of the northern end of Jazirat Jābrin, to which it is almost connected, is the south-western extremity of the swamps which extend from the 45 mainland and join those northward of the island.

Ras al Khān (*Lat. 28° 02' N., Long. 51° 20' E.*), about 15 miles north-north-westward of Nakhilū, is the southern end of a very low sandy ridge which is almost covered at high water. The ridge and the coast northward of it, almost as far as Kabgān, project considerably from the 50 coast farther northward and form the seaward edge of the swamps which probably constitute the delta of the Münd river and are part of the great valley between the coastal hills northward of Kabgān and the mountains extending in that direction from Kūh-i-Dirang.

Anchorage, affording indifferent shelter from the shamāl, may be

Chart 748b.

Chart 2837b.

obtained by small craft with local knowledge in a small bay, southward of Ras al Khān, in depths of from 2 to $2\frac{1}{2}$ fathoms ($3^{\text{m}}7$ to $4^{\text{m}}6$).

Khōr Ziyārat is a small creek with low banks about 8 miles northward of Ras al Khān; it can be entered by boats at high water, but the entrance, from which Kūh-i-Dirang bears 098° , is open north-westward; there are depths of about 4 feet ($1^{\text{m}}2$) on the bar, and 9 feet ($2^{\text{m}}7$) in the channel for about 2 miles within it. The creek is a mouth of the Münd river, which after rains discharges a large volume of water.

Open anchorage may be obtained about $1\frac{1}{2}$ miles off the entrance of Khōr Ziyārat, in a depth of 4 fathoms ($7^{\text{m}}3$), mud, whence the depths decrease gradually to the coast.

For a short distance north-north-westward of Khōr Ziyārat, the coast is swampy, thence it becomes sandy with small rocky points, and is steep-to about one cable offshore. Ziyārat is a small village about 2 miles north-north-westward of Kabgān, and about 3 miles farther northward is Bālangistān, a small village, in which there is a square tower. Lāvar, about 2 miles north-north-westward of Bālangistān, is a conspicuous village standing on the bluff of a sandy hill about 60 feet ($18^{\text{m}}3$) high. In it are two square towers, the southern of which is a Customs-post and has a flagstaff. Here there is a rough break-water, for the use of small boats; it dries out and should be approached with caution. When approaching the village from north-westward, two conspicuous peaks, sickle-shaped with points opposed, will be seen.

Anchorage may be obtained by small vessels with local knowledge, in a depth of 3 fathoms ($5^{\text{m}}5$), about three-quarters of a mile offshore, with the sickle-shaped peaks bearing about 107° .

A red conical buoy, surmounted by a staff and globe, is moored off Lāvar (*Lat. $28^{\circ} 18' N.$, Long. $51^{\circ} 13' E.$*), in a depth of 17 feet ($5^{\text{m}}2$), to mark the anchorage.

There are several villages situated on the coast between Lāvar and Qalat (Kalat), about 6 miles north-north-westward.

COAST OF TANGISTAN.—Aspect.—The coast of the sub-district of Tangistan extends north-north-westward from a position close northward of Qalat for a distance of about 30 miles to Halileh.

A range of coastal mountains, known as Kūh-i-Mund or Kūh-i-Kār, rises a few miles northward of Khōr Ziyārat, continues along the coast of Tangistan for about 24 miles northward of Qalat and then falls to the plain inland of Bushire. The plain between these hills and the sea is from one to 2 miles wide. Būriāl (Bu Riyal) or the Asses' Ears, one of the summits in the coastal range, rises, to an elevation of about 2,500 feet ($762^{\text{m}}0$), about 5 miles north-eastward of Qalat; it consists of two pinnacles, close together, with a smaller one northward of them, and is conspicuous. (See views G and J on chart 2837b). There are other peaks in this range, two of which, situated about 2 and 3 miles, respectively, northward of Būriāl, are higher than that mountain and form a saddle or notch, which is visible from north-westward.

From the rounded mountain 4,000 feet ($1219^{\text{m}}2$) high, mentioned on page 146, the main range of mountains trends north-north-westward. Khūrmūj (Kuh Khormúj), about 22 miles north-eastward of Būriāl, one of the peaks in this range, is about 6,500 feet ($1981^{\text{m}}2$) high and, except when close inshore, is visible above all parts of the coastal range; from south-westward, it appears as a long convex ridge, but from west-

Chart 748b.

Chart 2837b.

north-westward the ridge is end on and the mountain then appears as a fine peak with a long rounded slope on its northern side. *See* views G, J, and L on chart 2837a and view on chart 27.

8 The tidal streams off this coast are weak and often imperceptible.

Bāraki villages.—**Anchorages.**—This is the collective name of the eight southernmost villages on the coast of Tangistan. Karri, the southernmost, situated about one mile northward of Qalat, has two towers, the northern being round and the southern square; there **10** is also a very conspicuous palm. Good but open anchorage may be obtained off Karri, in a depth of 4 fathoms (7^m3) about 8 cables offshore.

Sālimābādeh, close northward of Karri, is easily identified by the very dark background which is peculiar to it; at its northern end there

15 is a date grove and at its southern end are a few conspicuous palms.

A square tower and a conspicuous mosque stand about one mile northward of the village. About 6 miles northward of Karri is 'Umari ('Omari), near the middle of which is a conspicuous square tower, and northward of it there is a date grove. At the northern end of this **20** village there is a mosque, which, though obscured from northward, shows up well from southward. Bulkhair lies in a small bay northward of 'Umari; there are several date trees on either side of the village and a conspicuous round tower stands at its northern end.

Anchorage may be obtained by small vessels with local knowledge **25** in the bay at Bulkhair, in a depth of 3 fathoms (5^m5), about three-quarters of a mile off the village.

Gāhi, a village, about one mile northward of Bulkhair, is nearly surrounded by date trees; off it there is a low sandy spit on which the sea always breaks; between Gāhi and Bulkhair there is a conspicuous **30** mosque. Rustami, about one mile northward of Gāhi, is easily identified by a high round tower in the middle of the village. There is a conspicuous mosque about half-way between Rustami and Gāhi.

Landing can usually be effected at any of the Bāraki villages; there are several small points which afford protection from north-westerly **35** winds.

The Bāraki villages should be approached with caution, as in some places depths less than those indicated on the chart have been found.

Coast.—Danger.—About 2 miles northward of Rustami (*Lat.* $28^{\circ} 34' N.$, *Long.* $51^{\circ} 05' E.$) there is a low cliff, from a position about **40** 2 miles northward of which low cliffs extend for some distance along the coast.

Bāshi, about 6 miles northward of Rustami, is a village in which there is a large round tower, and near it is a date grove. In this vicinity, the coastal hills trend inland falling to the plain behind **45** Bushire about 10 miles northward.

A shoal, over which there is a depth of $2\frac{1}{4}$ fathoms (5^m0), lies about 2 miles south-westward of Bāshi.

Nargiszār and Dilbar, situated, respectively, about 3 and 6 miles northward of Bāshi, are moderate sized villages surrounded by date **50** groves.

Halileh bay is entered between Bāshi and Ras Halileh, about 14 miles north-westward; its shores are low and sandy, and over its greater part the depths are less than 2 fathoms (3^m7), chiefly mud. Khōr Khuvaïr, a small creek, the entrance to which dries, is entered

Chart 748b.

Chart 2837b.

near the head of the bay ; near it there is a small fort and a date grove. About 2 miles north-westward of Khōr Khuvair is the mouth of a large creek which drains the Mashileh ; dry sands extend about a quarter of a mile off the mouth of the creek, which latter nearly dries. The Mashileh is a large salt-water swamp which connects the dry land on which Bushire stands to the great plain inland of that place. 5

BUSHIRE AND APPROACHES.—Coast.—Anchorage.—Between the mouth of the creek which drains the Mashileh and Ras Halileh, the coast consists of a ridge of sand about 5 feet ($1^m 5$) high, 10 which is covered with tufts of coarse grass and increases in width from about a quarter of a cable at its eastern end.

Ras Halileh is low, and from it a rocky spit extends about 4 cables south-westward. Halileh is a village, about 7 cables north-north-westward of the point, and about a mile eastward of the point there 15 are some clumps of date trees which extend inland to the marshes.

Good anchorage may be obtained by small craft during a shamāl, in a depth of 3 fathoms ($5^m 5$), about half a mile offshore, with Ras Halileh in line with the tower in the village, bearing about 329° .

Between Ras Halileh and Rishahr point, about $5\frac{1}{2}$ miles north-west-20 ward, the coast is rocky with cliffs from which reefs extend about 2 cables. Two clumps of date trees stand about one mile northward of Halileh village and thence the ground rises to a table-land, about 150 feet ($45^m 7$) high, between the coast and the marshes.

Off-lying banks.—A detached bank, with a depth of 7 fathoms 25 ($12^m 8$), was reported by H.M.S. *Lapwing*, in 1903, to lie about 10 miles southward of Ras Halileh, but its position is doubtful. A bank, with a depth of 10 fathoms ($18^m 3$), lies about 9 miles south-westward of Ras Halileh, its position being doubtful. A bank, with a depth of 11 fathoms ($20^m 1$), was reported, in 1890, by H.M.S. *Sphinx* to lie 30 about 35 miles west-north-westward of Ras Halileh. As none of these banks were closely examined, it is possible that the depths over them may be less than charted.

Chart 27.

Coast.—Anchorages.—Immediately eastward of Rishahr point 35 (*Lat. $28^\circ 54' N.$, Long. $50^\circ 49' E.$*) there is a small bay, the shores of which are cliffy ; on these cliffs are the ruins of a white house surmounted by a white staff and triangle, and on the foreshore, south-westward of the ruins, is the conspicuous chimney of a distillery, 78 feet ($23^m 8$) in height.

The telegraph buildings, situated about three-quarters of a mile north-north-eastward of Rishahr point and the masts of a W/T station, the central of which latter is about 200 feet ($61^m 0$) high, are conspicuous. 40

Imāmzādeh, on the highest part of the land eastward of Rishahr point, is a conspicuous domed mosque, situated about $1\frac{1}{2}$ miles eastward of the point. A small village surrounds the mosque. See view on chart 27.

The country house, which the British Resident sometimes occupies, is situated about half a mile southward of Imāmzādeh, and is conspicuous ; there is also a flagstaff here but it is not conspicuous. 50

In 1911, H.M.S. *Philomel* anchored, in a depth of about 4 fathoms ($7^m 3$), about 2 miles offshore westward of the telegraph buildings ;

Chart 748b.

Chart 27.

during a shamāl the ship dragged ; whilst the north-west-going tidal stream was running a very heavy sea got up and it became necessary to put to sea.

5 In 1908, however, H.M.S. *Proserpine* anchored near the same position and rode out a shamāl, which lasted for three days, without dragging.

Indifferent landing, in calm weather, may be obtained under the ruins of the white house ; but with any wind or swell it becomes impracticable.

10 **Prohibited anchorage.—Shoals.**—Anchorage is prohibited off Rishahr point between lines drawn 220° and 265° from the ruins of the white house on the point ; on the latter bearing, the ruins and Imāmzādeh are in alignment.

A shoal, with a depth of 3 fathoms ($5^{\text{m}}5$), lies in the prohibited anchorage, about one mile west-south-westward of Rishahr point, and another shoal with the same depth, lies about 7 cables westward of the point.

Coast.—Light.—**Dangers.**—About a mile north-north-westward of Rishahr point there is a small clump of date palms, and half a mile farther is Ras ash Shaghāb, which is the westernmost part of a low, sandy projection, thence for $3\frac{1}{2}$ miles northward the coast is low and sandy, thence cliffs, about 15 feet ($4^{\text{m}}6$) high, continue northward for about half a mile to the outskirts of the town of Bushire. From Rishahr point to the town, the coast is fringed by a reef extending from one to $2\frac{1}{2}$ cables offshore ; in many places, rocky boulders, drying about 3 feet ($0^{\text{m}}9$), lie on the outer edge of the reef.

A light is exhibited, at an elevation of 94 feet ($28^{\text{m}}7$), from a white steel structure with red bands, 87 feet ($26^{\text{m}}5$) in height, situated about $2\frac{1}{2}$ miles northward of Rishahr point. A light, for the use of aircraft, is also exhibited.

Mufqa'eh, about midway between Ras ash Shaghāb and Bushire, is a small fishing village, at which a break in the coastal reef forms a small boat harbour. A building, with high arched windows, two towers, and a flagstaff between them, stands at the southern end of Mufqa'eh, and is conspicuous ; another tower stands at the northern end of the village.

Two wireless masts (*Lat. $28^{\circ} 57'$ N., Long. $50^{\circ} 50'$ E.*), which are conspicuous, are situated about $1\frac{1}{2}$ miles east-south-eastward of the building at Mufqa'eh.

40 A conspicuous building with two towers, surrounded by an extensive wall is situated on the coast about $1\frac{1}{2}$ miles north-north-eastward of Mufqa'eh, and about 7 cables farther northward is the British Residency at Bushire, with a flagstaff near it.

Two 2-fathom ($3^{\text{m}}7$) patches lie about $1\frac{1}{2}$ miles west-north-westward of the British Residency.

45 A flat, over which there are depths of less than 2 fathoms ($3^{\text{m}}7$), extends northward and north-westward from Bushire and the coast in its vicinity, and westward from Jazirat Shaikh Sa'ad (page 153). On this flat are a number of sand banks, which dry from one to 3 feet ($0^{\text{m}}3$ to $0^{\text{m}}9$) in patches.

Raq'at-as-Sāfi, on the above flat, extends about one mile north-westward from Bushire ; it dries about 2 feet ($0^{\text{m}}6$) in patches, and through it are small channels which are used at high water by boats with local knowledge as a short cut between vessels in the outer

Chart 27.

anchorage and the quay in Khōr Sultānī on the eastern side of Bushire.

Ras al Marg, the north-western extremity of the flats, is situated about 2 miles north-westward of the northern end of Bushire ; it has 5 depths of from 2 to 5 feet ($0^{\text{m}}6$ to $1^{\text{m}}5$) over it, and is steep-to on its north-western side ; in 1939, it was reported to be extending westward. Lakfēh sands, with depths of from 2 to 3 feet, extend about $1\frac{1}{2}$ miles eastward from Ras al Marg. The sea seldom breaks on Lakfēh sands, except at very low water or during strong winds. Ras al Jabri is the 10 eastern extremity of the sands.

Raq'at-al-'Ali, over which there are depths of less than 2 fathoms ($3^{\text{m}}7$), is the southern extremity of an extensive flat which extends southward from the coast eastward of Ras ash Shatt (see below) to a position nearly 3 miles west-north-westward of the British Residency 15 at Bushire.

In depths of less than $1\frac{1}{2}$ fathoms ($2^{\text{m}}7$), the bottom is hard sand ; in depths greater than $1\frac{1}{2}$ fathoms ($2^{\text{m}}7$), it is sand and mud, and is softer.

Jazirat Shaikh Sa'ad, on the eastern side of Bushire harbour, extends 20 about 4 miles northward from a position about $2\frac{1}{2}$ miles east-north-eastward of the British Residency. Except for a narrow strip along its western and northern coasts, the island is low and swampy. The northern extremity of the island is rocky and about 10 feet ($3^{\text{m}}0$) high ; on it are a large village and a small tower, about 50 feet ($15^{\text{m}}2$) 25 high. A conspicuous solitary palm stands about $2\frac{1}{2}$ miles southward of the tower.

Bar Abbāsak, the quarantine station, is situated at the southern end of Jazirat Shaikh Sa'ad.

Chart 2837b.

Shif, in the district of Angālī, is situated about $1\frac{1}{2}$ miles eastward of the tower on Jazirat Shaikh Sa'ad ; it is a rocky point, about 25 feet ($7^{\text{m}}6$) high, on which there is a small building. Eastward of Shif, the country is low, barren, and in places swampy for some miles ; there are extensive swamps northward of it towards the Rūd-Hilleh 35 district.

Tahima point lies about $1\frac{1}{2}$ miles north-north-westward of the northern end of Jazirat Shaikh Sa'ad ; it is a small sandy projection, from which rocks extend for some distance, and is occasionally used as a landing place at high water.

Ras ash Shatt lies about 9 miles westward of Tahima point (*Lat. $29^{\circ} 06' N.$, Long. $50^{\circ} 52' E.$*) and 11 miles north-westward of Bushire. The northern side of the harbour, between Tahima point and Ras ash Shatt, is composed of extensive mud banks intersected by numerous large and deep creeks the entrances of which are shallow ; on the mud 45 banks are a number of drying sand knolls.

Ras ash Shatt is a narrow strip of sand, barely above water, eastward of which a swamp extends for many miles ; the swamp is intersected by numerous creeks which are fairly deep inside but have depths of about 2 feet ($0^{\text{m}}6$) only at their mouths. The point, and the banks 50 off it, afford shelter to Bushire harbour, from the shamāl.

Chart 27.

Buoyage.—A conical light-buoy, painted in black and white bands, and exhibiting a *white flashing light every ten seconds*, is moored

Chart 27.

in the outer anchorage about $4\frac{1}{2}$ miles west-south-westward of the British Residency.

A conical light-buoy, painted black, and exhibiting a *red flashing* light every ten seconds, is moored on the south-eastern side of Raq'at-al-'Ali, about $2\frac{1}{2}$ miles north-westward of the British Residency.

A black conical buoy is moored off the north-western side of Ras al Marg.

Anchorages.—Channels.—Vessels whose draught will not permit them to enter the inner anchorage, should anchor in a depth of from $4\frac{1}{2}$ to 5 fathoms ($7^{\text{m}}8$ to $9^{\text{m}}1$), in the vicinity of the outer light-buoy, but clear and preferably southward of the prohibited anchorage, which latter lies within a radius of 3 cables from the light-buoy; this anchorage is exposed both to the shamāl and the kaus; sailing boats can fetch off with the prevailing winds.

In fine weather, a small steam vessel may obtain temporary anchorage, in a depth of $2\frac{1}{2}$ fathoms ($4^{\text{m}}1$), with the flagstaff of the British Residency in Bushire bearing 045° , distant about one mile. Landing can be effected near the flagstaff.

Khōr Daireh (Deira), the name of the inner anchorage, is a bight in the flats which extends about 3 miles north-eastward between the south-eastern side of Raq'at-al-'Ali and Ras al Marg. There are depths of from $2\frac{1}{2}$ to $2\frac{1}{4}$ fathoms ($4^{\text{m}}1$ to $5^{\text{m}}0$) in the approach, and the bottom is everywhere soft mud, but in the middle of the bight the depths increase to $3\frac{1}{4}$ fathoms ($6^{\text{m}}9$), mud, with good holding ground. Steam vessels with a draught up to 15 feet ($4^{\text{m}}6$) may enter this anchorage at any state of the tide unless the shamāl is blowing.

In the inner anchorage, the farther north-eastward the better is the shelter from the shamāl. A good position in which to anchor is, in a depth of about $3\frac{1}{4}$ fathoms ($6^{\text{m}}4$), with the flagstaff of the former residence of the Persian Governor, on the eastern side of Bushire, half a mile eastward of the British Residency, bearing 149° , and the conspicuous solitary palm northward of Bar Abbāsak, 090° .

Bandar al Ghāwi, south-eastward of Ras al Jabri (*Lat. $29^{\circ} 01' N.$, Long. $50^{\circ} 50' E.$*), is the local name of the anchorage, in depths of from one to $1\frac{1}{2}$ fathoms ($1^{\text{m}}8$ to $2^{\text{m}}3$), used by small native craft and sheltered by Lakieh sands.

Charts 27, 2837b.

From the inner anchorage, a comparatively deep but narrow channel trends northward and eastward, passing about one mile westward of Jazirat Shaikh Sa'ad and running round its northern end at a distance of about a quarter of a cable offshore. The large mudflats on the northern side of the channel dry. This channel passes about half a mile southward of Shif, towards which a branch extends with a depth in it of $3\frac{1}{4}$ feet ($1^{\text{m}}1$), and ends in a mud flat about 2 cables from Shif.

Pilot.—Vessels requiring a pilot should await his arrival at the outer anchorage. Weather permitting, he will always come out if required.

Directions.—In clear weather, the position of the vessel may be determined at some distance from the port by bearings of Gisakān bluff, Khūrmūj, and Būriāl, see pages 226 and 149, and view on chart 27, and views G, J, K, and L on chart 2837b.

Approaching from south-eastward, a vessel should steer to pass about 6 miles off Ras Halileh, and thence continue north-westward

Charts 2837b, 748b.

Charts 27, 2837b.

in depths of not less than 6 fathoms ($11^{\text{m}0}$), anchoring according to draught southward of the light-buoy at the outer anchorage. From south-westward, Imāmzādeh mosque, and the British Residency close southward of it as well as the telegraph buildings at Rishahr will be the first objects sighted, showing white, especially in the afternoon sun. The depths decrease regularly as the coast is approached. Small vessels may keep near the coast, according to draught.

Approaching from northward, a vessel, when passing Ras ash Shatt, should not get into depths of less than 10 fathoms ($18^{\text{m}3}$) and should ¹⁰ keep in that depth until the light-buoy marking the outer anchorage is sighted.

Chart 27.

From the outer anchorage, a vessel may approach with the flagstaff of the British Residency at Bushire bearing 076° until the building ¹⁵ with two towers at the southern end of Mufqa'eh bears 135° , when she should steer 000° , and when the Residency flagstaff bears 108° , she should steer 028° to the anchorage, passing eastward of the inner light-buoy. The least depth by this route is $2\frac{1}{2}$ fathoms ($4^{\text{m}6}$).

If approaching from westward the vessel may keep the Residency ²⁰ flagstaff bearing 103° until the building with two towers at the southern end of Mufqa'eh bears 149° , and then steer 028° for the anchorage; the least depth by this route is $2\frac{1}{2}$ fathoms ($4^{\text{m}1}$).

Approaching from southward, the vessel may pass about one mile off Ras ash Shaghāb (*Lat. $28^{\circ} 55' N.$, Long. $50^{\circ} 48' E.$*) and steer 359° ²⁵ until the Residency flagstaff bears 108° , thence steering 028° to the anchorage; the least depth by this route is $2\frac{1}{2}$ fathoms ($4^{\text{m}6}$).

Tidal streams.—In the offing, the tidal streams set up and down the coast, but are weak.

In the entrance of the harbour the tidal streams set northward and ³⁰ southward; near Raq'at-as-Sāfī, they set eastward and westward across the shoals at the mouth of Khōr Sultāni (*see below*).

In the inner anchorage they set from north-north-eastward to east-north-eastward, and from south-south-westward to west-south-westward; at spring tides they attain a rate of one knot, and at neaps, ³⁵ from a quarter to half a knot. Northward and eastward of the inner anchorage, the tidal streams over the flats are weak.

In Khōr Sultāni, the tidal streams are very strong off the town and round the northern end of Jazirat Shaikh Sa'ad.

The July spring tide is the highest in the year. ⁴⁰

The winds have considerable effect on the tidal streams; the shamāl causes the streams to turn later and lowers the general level, sometimes as much as one foot ($0^{\text{m}3}$); the kaus, on the other hand, raises the general level. In summer the day tides are higher than the night tides; in winter the reverse is the case. At all times the rise of the ⁴⁵ lower tide is very small.

Khōr Sultāni.—**Buoy.**—This large creek, with a shallow bar at its mouth, runs in south-eastward past the eastern side of Bushire and affords access to the quay.

Alafdān is the north-western extremity of an extensive sand and ⁵⁰ mud flat which extends from the southern end of Jazirat Shaikh Sa'ad; it forms the north-eastern side of the entrance to Khōr Sultāni, and its northern extremity lies about $8\frac{1}{2}$ cables northward of the northern end of the town of Bushire.

Charts 2837b, 748b.

Chart 27.

in the outer anchorage about $4\frac{1}{2}$ miles west-south-westward of the British Residency.

5 A conical light-buoy, painted black, and exhibiting a *red flashing* light *every ten seconds*, is moored on the south-eastern side of Raq'at-al-'Ali, about $2\frac{1}{2}$ miles north-westward of the British Residency.

A black conical buoy is moored off the north-western side of Ras al Marg.

Anchorages.—Channels.—Vessels whose draught will not permit **10** them to enter the inner anchorage, should anchor in a depth of from $4\frac{1}{2}$ to 5 fathoms ($7^{\text{m}}8$ to $9^{\text{m}}1$), in the vicinity of the outer light-buoy, but clear and preferably southward of the prohibited anchorage, which latter lies within a radius of 3 cables from the light-buoy; this anchorage is exposed both to the shamāl and the kaus; sailing boats can **15** fetch off with the prevailing winds.

In fine weather, a small steam vessel may obtain temporary anchorage, in a depth of $2\frac{1}{2}$ fathoms ($4^{\text{m}}1$), with the flagstaff of the British Residency in Bushire bearing 045° , distant about one mile. Landing can be effected near the flagstaff.

20 Khōr Daireh (Deira), the name of the inner anchorage, is a bight in the flats which extends about 3 miles north-eastward between the south-eastern side of Raq'at-al-'Ali and Ras al Marg. There are depths of from $2\frac{1}{2}$ to $2\frac{3}{4}$ fathoms ($4^{\text{m}}1$ to $5^{\text{m}}0$) in the approach, and the bottom is everywhere soft mud, but in the middle of the bight the depths **25** increase to $3\frac{1}{4}$ fathoms ($6^{\text{m}}9$), mud, with good holding ground. Steam vessels with a draught up to 15 feet ($4^{\text{m}}6$) may enter this anchorage at any state of the tide unless the shamāl is blowing.

30 In the inner anchorage, the farther north-eastward the better is the shelter from the shamāl. A good position in which to anchor is, in a depth of about $3\frac{1}{2}$ fathoms ($8^{\text{m}}4$), with the flagstaff of the former residence of the Persian Governor, on the eastern side of Bushire, half a mile eastward of the British Residency, bearing 149° , and the conspicuous solitary palm northward of Bar Abbāsak, 090° .

Bandar al Ghāwi, south-eastward of Ras al Jabri (*Lat. $29^{\circ} 01' N.$, Long. $50^{\circ} 50' E.$*), is the local name of the anchorage, in depths of from **35** one to $1\frac{1}{2}$ fathoms ($1^{\text{m}}8$ to $2^{\text{m}}3$), used by small native craft and sheltered by Lakfēh sands.

Charts 27, 2837b.

40 From the inner anchorage, a comparatively deep but narrow channel trends northward and eastward, passing about one mile westward of Jazirat Shaikh Sa'ad and running round its northern end at a distance of about a quarter of a cable offshore. The large mudflats on the northern side of the channel dry. This channel passes about half a mile southward of Shif, towards which a branch extends with a depth **45** in it of $3\frac{1}{4}$ feet ($1^{\text{m}}1$), and ends in a mud flat about 2 cables from Shif.

Pilot.—Vessels requiring a pilot should await his arrival at the outer anchorage. Weather permitting, he will always come out if required.

Directions.—In clear weather, the position of the vessel may be **50** determined at some distance from the port by bearings of Gisakān bluff, Khūrmūj, and Būriāl, see pages 226 and 149, and view on chart 27, and views G, J, K, and L on chart 2837b.

Approaching from south-eastward, a vessel should steer to pass about 6 miles off Ras Halileh, and thence continue north-westward

Charts 2837b, 748b.

Charts 27, 2837b.

in depths of not less than 6 fathoms ($11^{\text{m}0}$), anchoring according to draught southward of the light-buoy at the outer anchorage. From south-westward, Imāmzādeh mosque, and the British Residency close southward of it as well as the telegraph buildings at Rishahr will be the first objects sighted, showing white, especially in the afternoon sun. The depths decrease regularly as the coast is approached. Small vessels may keep near the coast, according to draught.

Approaching from northward, a vessel, when passing Ras ash Shatt, should not get into depths of less than 10 fathoms ($18^{\text{m}3}$) and should ¹⁰ keep in that depth until the light-buoy marking the outer anchorage is sighted.

Chart 27.

From the outer anchorage, a vessel may approach with the flagstaff of the British Residency at Bushire bearing 076° until the building ¹⁵ with two towers at the southern end of Mufqa'eh bears 135° , when she should steer 000° , and when the Residency flagstaff bears 108° , she should steer 028° to the anchorage, passing eastward of the inner light-buoy. The least depth by this route is $2\frac{1}{2}$ fathoms ($4^{\text{m}6}$).

If approaching from westward the vessel may keep the Residency ²⁰ flagstaff bearing 103° until the building with two towers at the southern end of Mufqa'eh bears 149° , and then steer 028° for the anchorage ; the least depth by this route is $2\frac{1}{2}$ fathoms ($4^{\text{m}1}$).

Approaching from southward, the vessel may pass about one mile off Ras ash Shaghāb (*Lat. $28^{\circ} 55' N.$, Long. $50^{\circ} 48' E.$*) and steer 359° ²⁵ until the Residency flagstaff bears 108° , thence steering 028° to the anchorage ; the least depth by this route is $2\frac{1}{2}$ fathoms ($4^{\text{m}6}$).

Tidal streams.—In the offing, the tidal streams set up and down the coast, but are weak.

In the entrance of the harbour the tidal streams set northward and ³⁰ southward ; near Raq'at-as-Sāfī, they set eastward and westward across the shoals at the mouth of Khōr Sultāni (*see below*).

In the inner anchorage they set from north-north-eastward to east-north-eastward, and from south-south-westward to west-south-westward ; at spring tides they attain a rate of one knot, and at neaps, ³⁵ from a quarter to half a knot. Northward and eastward of the inner anchorage, the tidal streams over the flats are weak.

In Khōr Sultāni, the tidal streams are very strong off the town and round the northern end of Jazirat Shaikh Sa'ad.

The July spring tide is the highest in the year. ⁴⁰

The winds have considerable effect on the tidal streams ; the shamāl causes the streams to turn later and lowers the general level, sometimes as much as one foot ($0^{\text{m}3}$) ; the kaus, on the other hand, raises the general level. In summer the day tides are higher than the night tides ; in winter the reverse is the case. At all times the rise of the ⁴⁵ lower tide is very small.

Khōr Sultāni.—**Buoy.**—This large creek, with a shallow bar at its mouth, runs in south-eastward past the eastern side of Bushire and affords access to the quay.

Alafdān is the north-western extremity of an extensive sand and ⁵⁰ mud flat which extends from the southern end of Jazirat Shaikh Sa'ad ; it forms the north-eastern side of the entrance to Khōr Sultāni, and its northern extremity lies about $8\frac{1}{2}$ cables northward of the northern end of the town of Bushire.

Charts 2837b, 748b.

Chart 27.

A conspicuous wreck which, in 1939, had a funnel standing, lies stranded on Alafdān about $1\frac{1}{2}$ miles east-north-eastward of the British Residency at Bushire.

5 Ras Fūdar, on the southern side of Khōr Sultāni, about $1\frac{1}{2}$ miles south-eastward of the former residence of the Persian Governor, is about 30 feet (9^m1) high.

Muharraq island, north-eastward of Ras Fūdar, is swampy and on its south-western end, about 4 cables from that point, are some fishermen's huts ; the island is nowhere more than about 3 feet (0^m9) high, and most of it covers at high water spring tides ; that part of the flat extending from Jazīrat Shaikh Sa'ad, which lies northward of Muharraq island, is rocky.

Between the south-western end of Muharraq island and Ras Fūdar, 15 Khōr Sultāni bifurcates, the principal branch, Khōr Shakari (Lashkari), running in a north-easterly direction, southward of that island and Jazīrat Shaikh Sa'ad, and the other, Khōr Pūdar (Pooda), running south-eastward through a sandy plain which covers at high water springs for many miles.

20 About 5 miles south-south-eastward of Ras Fūdar there is a low point ; between the creek and the rising ground towards Imāmzādeh are some groves of date trees and cultivated land.

Khōr Sultāni is approached across the great flat southward of Lakfēh sands, in depths of from about three-quarters of a fathom to 25 one fathom (1^m4 to 1^m8). In 1920, the approach was made, either by Khōr Bahrani southward of Ras al Marg, or northward, eastward, and south-eastward round Lakfēh sands. Bāgalas with a draught of 10 feet (3^m0) use these passages, but local knowledge is necessary. As there is usually a confused sea on the bar, boats with a draught of 30 more than 3 feet (0^m9) should be cautious of entering within two hours of low water. Abreast Alafdān (*Lat. 29° 00' N., Long. 50° 50' E.*), the entrance is about half a mile wide with depths in it of from one to $1\frac{1}{2}$ fathoms (1^m8 to 2^m3) ; abreast the town, it is about one cable wide with depths of from 4 to 7 fathoms (7^m3 to 12^m8), hard bottom.

35 Bushire.—This, the principal seaport of Persia, is situated on a rocky ridge which does not exceed 40 feet (12^m2) in elevation. It is poorly built, and most of the streets are narrow. See view on chart 27.

As far as Sangi, a village situated about one mile southward of 40 the town, the ground is swampy, and, with the exception of a narrow strip along the western coast, it covers at very high water. The land rises in a gradual slope to Imāmzādeh ; in that direction there are also several small hamlets.

Bushire is the administrative headquarters of the Persian province 45 of the Gulf ports, Dashti and Dashtistān and, in 1936, had an estimated population of about 26,500. The Governor resides about 3 miles southward of the town ; his offices are in one of the larger houses on the sea wall on the western side of the town. There are a number of European residents, and there are small Armenian and Roman Catholic 50 churches in the town.

Bushire is the headquarters of the British Political Resident in the Persian gulf.

Consul.—British Consular officers are stationed at Bushire.

Quarantine.—The town is healthy, but during the hot summer 55 malaria is prevalent.

Chart 748b.

Chart 27.

The Quarantine regulations are very strict and the authorities enforce all penalties. Passengers less than five days out of Bombay, or other infected ports, are landed there.

Trade.—The principal exports are cotton, opium, gum, poppy seed and mohair; general merchandise is imported.⁵

Harbour facilities.—Fresh provisions may be obtained, but previous notice is required; vegetables are, however, scarce. Distilled water may be obtained.

The best landing place is at the Custom house quay, which can ¹⁰ be identified by a 7-ton crane on it.

Communication.—Bushire is connected to the general telegraph system.

There is regular steamer communication with other ports in the Persian gulf. *See* page 17.¹⁵

For communication by air, *see* page 17.

W/T. station.—There is a W/T. station at Bushire. *See* page 17.

Meteorological table.—*See* page 42.

Port regulations.—*See* page 14.

Charts 2837b, 748b.

CHAPTER VI

**PERSIAN GULF, SOUTH-WESTERN SIDE—COAST OF TRUCIAL 'OMĀN,
AND EASTERN SIDE OF AL QATAR—RAS ASH SHA'M TO RAS RĀKĀN.**

Chart 2837a.

TRUCIAL 'OMĀN.—General remarks.—The eastern portion of Trucial 'Omān between Ras ash Sha'm (*Lat. 26° 03' N., Long. 56° 05' E.*) and Abu Dhabi, 133 miles south-westward, is throughout low and sandy; but the mountains of the Rutūs al Jibāl promontory are visible in clear weather until past Dibai (Dabei), about 64 miles south-westward of Ras ash Sha'm. This coast is remarkable for the high degree of refraction or mirage that is frequently experienced, especially in the early morning, when its features become greatly distorted, 10 villages sometimes appearing as clumps of rounded trees, and small uncharted hillocks or dunes as hills of considerable height.

The towns are all very similar in appearance and are situated near the entrances of khōrs or salt-water creeks, of which there are many along the coast, often connected to one another or forming large back-waters in which native craft lie. Everything connected with these 15 places seems to indicate a state of decay.

The similarity of appearance makes it difficult to distinguish one town from another.

Cattle, sheep and vegetables may be obtained at most places; 20 mullet can be caught in all the khōrs, and fish, generally, is plentiful.

The Great Pearl bank, which includes the whole of the area on the Arabian side of the Persian gulf within depths of 20 fathoms (36^{mgs}), begins about 60 miles south-westward of Ras ash Sha'm, *see* page 167.

Anchorage.—The whole of the eastern portion of the coast of 25 Trucial 'Omān is open from south-west, through north-west, to north-east, and the bottom is in many places hard, the holding ground, in consequence, being bad. On the approach of a winter shamāl, which here blows from west-north-westward, or even more westward, vessels should quit their anchorage. In winter, vessels should anchor farther 30 offshore than in summer.

Tidal streams.—The tidal streams off the coast set south-westward and north-eastward at a rate of about one knot.

Local weather.—*See* pages 30.

Chart 753.

35 Coast.—Between Ras ash Sha'm (page 102) and the town of

Chart 748b.

Chart 753.

Sha'm, about 2 miles southward, the coast is fringed to a distance of about a quarter of a mile offshore by a bank with depths of from 2 to 3 fathoms ($3^{\text{m}}7$ to $5^{\text{m}}5$), and is low and sandy, with a plain, partly cultivated, from one to $1\frac{1}{2}$ miles wide, between it and the mountains ⁵ of Ruūs al Jibāl.

Between Sha'm and the town of Rams, $8\frac{1}{2}$ miles south-south-westward, the coast continues low with mountains inland. The coastal bank, with depths of from 2 to 3 fathoms ($3^{\text{m}}7$ to $5^{\text{m}}5$), extends from 2 to 10 cables offshore. A small ruined tower stands on a hillock, ¹⁰ about 50 feet ($15^{\text{m}}2$) high, about one mile southward of Sha'm; from southward the hillock appears to have a peaked summit. Hanna, about 4 miles south-south-westward of Sha'm, is a village of mud huts on the northern side of a creek which may be entered by boats at high water. Whereas the coast northward of Ras ash Sha'm is comparatively steep-to, that south-westward of it is not so, depths of ¹⁵ 10 and 20 fathoms ($18^{\text{m}}3$ and $36^{\text{m}}6$), respectively, being found at distances of half a mile and 3 miles westward of Sha'm. The bottom, generally, is of sand.

Rams, a small town in which there is a fort, may be identified by ²⁰ a tower which shows above the tree-tops; it stands in a date grove on the southern side of a creek, the entrance to which nearly dries. In 1922, it was reported that the depths off Rams are less than charted. About 2 miles east-north-eastward of Rams is Zai, a small hill-fort with a square tower at either end, but being of dark colour it does not ²⁵ show up well against the mountains behind it. About $1\frac{1}{2}$ miles south-south-westward of Rams (*Lat. $25^{\circ} 53' N.$, Long. $56^{\circ} 02' E.$*) is the mouth of a small creek which trends southward and runs into Khōr Khaima. The coast in the vicinity is swampy but a short distance from it are date groves which extend far inland and continue southward, along the eastern side of Khōr Khaima. ³⁰

Chart 3791, plan of Ras al Khaimah.

Ras al Khaima.—This is a low sand spit which extends, parallel with the coast, for about $3\frac{1}{2}$ miles in a north-easterly direction, to a position about the same distance south-westward of Rams, and ³⁵ encloses a shallow lagoon.

The town, situated at the south-western end of the spit, consists chiefly of stone buildings; at the northern end of the town there is a white rectangular house with high windows, which, standing considerably higher than the surrounding buildings, is a good mark. ⁴⁰

A fort, with two square towers, stands on the wall built across the peninsula at the southern end of the town, and near it there is a large and conspicuous tree. A detached tower, which, in 1935, was in ruins, stands about 4 cables south-westward of the fort, and another one, which is conspicuous, about one mile farther south-westward, near the ⁴⁵ foot of some red sand hills. A white circular tower stands on the northern summit of these hills, at an elevation of about 80 feet ($24^{\text{m}}4$), about 2 miles southward of the fort.

Chart 753.

In the vicinity of Ras al Khaima the plain is about 6 miles wide, ⁵⁰ but its width increases rapidly south-westward, so that from northward the town appears to be situated where the mountains end. The red sand hills are about 130 feet ($39^{\text{m}}6$) high, and extend about 12 miles south-westward; from westward their northern end affords a guide

Chart 753.

to the locality. The tower at their south-western end is small and inconspicuous ; it is only visible from south-westward.

Chart 3791, plan of Ras al Khaimah.

5 Khōr Khaima is entered at the northern end of the sand spit and should be approached from north-eastward keeping close to the coast. There is a depth of 2 feet ($0^m 6$) in the entrance ; inside the khōr there are depths of 9 feet ($2^m 7$) as far as the town, close behind which native boats lie.

10 The towers shown on the plan on chart 3791 on the eastern side of the lagoon are obscured by trees and are scarcely visible from seaward.

Anchorages.—Shoals.—A good berth is in a depth of $5\frac{1}{2}$ fathoms ($10^m 1$) with the fort at Ras al Khaima bearing 138° , distant about $3\frac{1}{2}$ miles. Small vessels may anchor in a depth of $4\frac{1}{2}$ fathoms ($7^m 8$) with the fort bearing 123° , distant about 19 cables. The holding ground is good, and it is considered locally that there is not so much sea at this anchorage during a shamāl as there is at other places in the vicinity.

Caution is necessary when approaching the anchorage for there are 20 patches, with depths of from 15 to 18 feet ($4^m 6$ to $5^m 5$) lying within $3\frac{1}{2}$ miles of the coast in the vicinity of, and south-westward of, the anchorages. The locality has not been thoroughly examined ; the bottom consists mostly of sand. A small shoal, with a depth of less than 6 feet ($1^m 8$), lies about one mile north-westward of the fort, and 25 another, with a depth of 9 feet ($2^m 7$), lies about $1\frac{1}{2}$ miles north-north-westward of the fort (*Lat. $25^\circ 48' N.$, Long. $55^\circ 57' E.$*).

Chart 753.

Coast.—Jazirat al Hamra lies close off the mainland, about 10 miles south-westward of Ras al Khaima, and on it is the town of the 30 same name. At the town there is a fort which has several towers and in which there are a few round trees ; close to the fort is a high square tower with two rows of windows, and a high slender tower stands at the western end of the town. There are no date groves, but a solitary conspicuous palm stands near a tower at the eastern end of the town. 35 The south-western end of the red sand hills, mentioned on page 159, lies about 3 miles southward of the town.

Ras Abu Ahmad, about three-quarters of a mile north-eastward of Jazirat al Hamra, is a low sandy point at the entrance to an inlet, which trends south-westward between the town and the strip of sandy beach 40 forming the mainland ; there are depths of from 2 to 3 feet ($0^m 6$ to $0^m 9$) in the entrance, and from 7 to 8 feet ($2^m 1$ to $2^m 4$) inside, but off the town the inlet is shallow.

Between Jazirat al Hamra and Umm al Qaiwain, about 14 miles south-westward, a reef, which nearly dries in places, and was reported 45 in 1911 to be extending seaward, extends from one to $1\frac{1}{2}$ miles offshore, and by day shows up well. About 10 miles south-westward of Jazirat al Hamra there are depths of 2 fathoms ($3^m 7$) lying about 2 miles offshore ; this part of the coast has not been thoroughly examined. *Chart 3707.*

50 Khōr al Baidha, the entrance of which is situated about 7 miles south-westward of Jazirat al Hamra, trends south-westward and affords communication with the inlet at Umm al Qaiwain, but it is only available to small boats with local knowledge. Near the middle of the seaward side of the island separated from the mainland by Khōr al

Chart 3707.

Baidha, is a small fort with a double tower, which is conspicuous ; westward of it there is a date grove.

Umm al Qaiwain.—The point of this name is low and sandy, but has a rocky beach ; about $1\frac{1}{4}$ miles southward of it there is a date grove. About one mile eastward of the point is the entrance to an inlet which extends southward and westward forming a peninsula on which stands the town, in the middle of which is the Shaikh's fort, a square building with two round towers. There are several detached towers in the town, which, at a distance of about 10 miles, appear to stand in the sea ; one of the towers, on which there is a flagstaff, is much higher and larger than the others and, when the latter are below the horizon, has the appearance of a boat ; this tower, together with two others, stands on the point, and the three form part of a wall built across the isthmus. 15

The inlet is approached from a position about 2 miles north-north-eastward of Umm al Qaiwain (*Lat.* $25^{\circ} 36' N.$, *Long.* $55^{\circ} 34' E.$) and has a depth of about 2 feet (0^m6) in its entrance. A reef of sand and rocks extends northward from the western entrance point of the inlet and fringes the eastern side of the approach to it. 20

At the town, the inlet is about 3 cables wide with depths of from 6 to 8 fathoms (11^m0 to 14^m6) ; it then splits up into several branches, the main one trending southward. Behind the town, where the native boats lie, there are depths of 3 fathoms (5^m8). The inlet is an extensive backwater in which there are several low islets. 25

Anchorage.—Anchorage may be obtained, in depths of from 6 to 7 fathoms (11^m0 to 12^m8), with the large tower on the point bearing between 134° and 150° , distant from half a mile to one mile ; but in winter vessels should anchor farther out in a depth of 8 fathoms (14^m6). 30

Landing, except in fine weather, is bad, but it may be effected within the reef, which latter has depths over it, in places, of 3 feet (0^m9). Landing can also be effected within the entrance to the creek, close northward of the tower on the western entrance point, but care should be taken to avoid the reef extending northward from the point. 35

Coast.—The coast between Umm al Qaiwain and 'Ajmān, about 13 miles south-south-westward, is low and sandy, and in the vicinity of the various villages there are a few date palms.

The depths offshore are regular and the bottom is rocky ; between Umm al Qaiwain and a position about 2 miles north-eastward of 'Ajmān, there are depths of 5 or 6 fathoms (9^m1 to 11^m0) about one mile offshore. 40

Vessels should not anchor close inshore, for there there is a liability of losing an anchor.

At Al Hamriya, about 7 miles south-south-westward of Umm al Qaiwain, there is a fort with a tower at its southern end, which is conspicuous. Near the north-eastern end of the village there is a date grove. 45

In 1922, H.M.S. *Cyclamen* anchored, in a depth of $4\frac{1}{2}$ fathoms (7^m8), sand, about half a mile offshore ; and, in 1931, H.M.S. *Penzance* anchored, in a depth of 5 fathoms (9^m1), sand, with the fort bearing 140° , distant 9 cables. 50

Landing may be effected in a creek on the southern side of Al Hamriya ; but there is a bar at its entrance.

Chart 3791.

'Ajmān.—Dangers.—This town, in which there is a fort with a tall tower, is situated on the south-eastern side of Khōr 'Ajmān. The fort is small but high, and its tower, from which the Shaikh's flag is displayed, is 65 feet ($19^{\text{m}}8$) high and conspicuous. (See view facing this page). Berij al Mai, a watch tower, 46 feet ($14^{\text{m}}0$) high, stands about 7 cables south-south-westward of the fort.

A shoal, with a least depth of 16 feet ($4^{\text{m}}9$), lies about 7 cables offshore north-westward of the fort. The depths in the vicinity are irregular, 10 and the coast should not be approached at night into depths of less than 10 fathoms ($18^{\text{m}}3$).

Anchorage off 'Ajmān is bad, the bottom being hard coral and sand. In 1932, H.M.S. *Fowey* anchored, in a depth of 4 fathoms ($7^{\text{m}}3$), with the fort bearing 139° , distant $1\frac{1}{2}$ miles.

15 Khōr 'Ajmān is the easiest of access of any on this coast and is available to dhows. The entrance is north-westward of the fort, between the extremities of two sand spits which extend about $2\frac{1}{2}$ cables offshore; the bar, which is of sand, has a depth of 2 feet ($0^{\text{m}}6$) over it. Within the bar are two channels, one trending south-westward past 'Ajmān, 20 and the other, extending about half a mile east-north-eastward into Khōr Zora. The latter channel, in which there are depths of from 4 to 8 feet ($1^{\text{m}}2$ to $2^{\text{m}}4$), extends close along the southern side of the north-eastern entrance point and then opens out into drying lagoons forming Khōr Zora. Off the town, there are depths of 2 fathoms ($3^{\text{m}}7$) in the 25 inlet.

Coast.—A date grove extends about one mile south-westward from Al 'Ajmān, thence to Al Haira (*Lat. $25^{\circ} 23' N.$, Long. $55^{\circ} 24' E.$*), situated about $2\frac{1}{2}$ miles south-westward of the fort at Al 'Ajmān, there is a clear uncultivated space, in which there is a watch tower, 63 feet 30 ($19^{\text{m}}2$) high, conspicuous from north-westward; between Al Haira and the northern end of Shārja, about $1\frac{1}{2}$ miles south-westward, the date groves are continuous. At Al Haira there are two detached towers and a small ruined tower about one cable south-eastward of the southern tower. There are several villages between Al Haira and Shārja, 35 but from seaward they appear to be connected to Shārja.

Shārja.—This, the largest and most important town in Trucial 'Omān, extends about $1\frac{1}{2}$ miles along the eastern bank of Khōr Shārja, which trends south-westward parallel with the coast; in it are several detached towers of unequal height and a fort. The Shaikh's residence 40 is a large white two-storied building; his flag is displayed from the eastern tower of the fort, 46 feet ($14^{\text{m}}0$) high, situated about one cable northward of his residence.

Great Britain is represented by an Arab who is the agent of the Political Resident in the Persian gulf; his house is about 4 cables north-north-eastward of the fort, and from its roof the Union flag is displayed when any of H.M. Ships are lying at anchor off the town.

Laiya (Aliya) is a large suburb of Shārja, situated on the seaward side of Khōr Shārja, about a mile westward of the fort. A two-storied square house with a tower stands at the southern end of Laiya, but 50 most of the village is composed of mat huts; a few mud buildings stand on the sandy spit close north-eastward of Laiya.

At the southern end of Shārja some rocky rising ground extends to a bluff, 27 feet ($8^{\text{m}}2$) high, on the bank of Khōr Shārja; there is a small ruined tower about 4 cables south-eastward of the bluff. The beach in

Fort,
bearing 127°,
2 miles.

A j i m a n t o w n f r o m n o r t h - w e s t w a r d .

(Original dated 1934.)

Wireless
masts.

Khān minaret,
bearing 124°, 2.4 miles.

Solitary
palm.

View, in two parts, of Khān from north-westward.

(Original dated 1933.)

Chart 3791.

front of Laiya is of white sand, but the bluff and Laiya point, a small rocky projection, which, when in line with the latter bears about 167° , are both dark coloured though inconspicuous until close to. In 1928, a large lighter lay stranded on the rocks at Laiya point. 5

Khōr Shārja is very small and shallow, and its entrance lies west-north-westward of the conspicuous tower, known as Berij Sharqān, situated $1\frac{1}{2}$ miles north-eastward of the fort ; the depth on the bar is about one foot ($0^{\text{m}}3$). After passing the town, the creek winds round the bluff and opens out into a wide though shallow lagoon and 10 eventually joins with Khōr Khān, south-westward of it.

Anchorage.—In order that the sea breeze may be a leading wind for sailing boats proceeding to and from the landing place, vessels should anchor with Laiya point (*Lat. $25^{\circ} 22' N.$, Long. $55^{\circ} 22' E.$*) bearing between 180° and 160° , in summer, in a depth of about 5 fathoms 15 ($9^{\text{m}}1$), and in winter, in a depth of about 7 fathoms ($12^{\text{m}}8$) ; in either case the holding ground is bad, being rock and coral covered with a little sand. In 1931, H.M.S. *Penzance* anchored, in a depth of $4\frac{1}{2}$ fathoms ($8^{\text{m}}2$), with the fort bearing 130° , distant about one mile.

A good leading line for approaching the anchorage is the flagstaff 20 of the British Agent's Residency in line with the 56-foot ($17^{\text{m}}1$) tower, situated about three-quarters of a mile south-eastward of it; bearing about 149° .

Caution must be exercised when approaching the anchorage from west-north-westward for a southerly set is often experienced after 25 passing Jazīrat Sirri (page 132).

The best landing place is not in the creek, at the entrance of which there is usually some surf, but on the sandy spit protecting the creek, directly opposite the British Resident Agent's house, or under the lee of the rocks at Laiya point ; the latter is the most convenient except at 30 low water. From either of these landing places the creek has to be crossed to reach Shārja, but ferries are usually available.

Coast.—Danger.—Khān is a village situated on the northern side of a small creek about 2 miles south-westward of Laiya. It is the most easily distinguished village in the neighbourhood, the country in 35 the vicinity being low and swampy for some miles inland. Khōr Khān divides into two branches, one trending northward into the lagoon southward of Shārja, and the other extending south-westward towards Daira. Khān village consists chiefly of mat huts, but in it are two round towers, one square tower and a conspicuous minaret, 40 feet 40 ($12^{\text{m}}2$) high. *See* view facing page 162.

Abu Hail is a small rush village about 2 miles south-westward of Khān minaret and is inhabited during the date-picking season only ; the northern side of this village, which is not conspicuous, marks the approximate boundary between the Shārja and Dibai territories. 45 About three-quarters of a mile farther south-westward is a small group of huts, used as a quarantine village and known as Ferij al Muhadhām.

A detached shoal, with a depth of 18 feet ($5^{\text{m}}5$), lies about $1\frac{1}{2}$ miles north-westward of Berij Nahar, a conspicuous tower, 54 feet ($16^{\text{m}}5$) in height, situated about $1\frac{1}{2}$ miles south-westward of Ferij al Muhadhām. 50

There is no good anchorage off this stretch of coast ; the holding ground is bad and vessels anchoring should veer plenty of cable.

Chart 3791, plan of Dabei.

Dibai.—Dangers.—Anchorages.—Dibai (Dabei) is situated a

Chart 3791, plan of Dabei.

short distance inland on the southern side of Khōr Dibai (Dabei), and from it a date grove extends about 2 miles south-westward, terminating in a detached clump.

5 Daira is a large suburb consisting of mat huts, amongst which stand a number of well-built houses, most of which latter have square towers with pillared tops ; it stands on the north-eastern side of Khōr Dibai, on a point formed by a sharp bend in the creek. Shandagha (Shendagha) is a suburb of Dibai and is situated on the spit which forms

10 the western side of the entrance to Khōr Dibai.

Dibai contains the residence of the Shaikh. There are several tall towers in Dibai ; the fort is a conspicuous square building with a round tower (*Lat.* $25^{\circ} 16' N.$, *Long.* $55^{\circ} 18' E.$), 56 feet (17 m 1) high, on its south-western corner, from which the Shaikh's flag is displayed. The

15 highest building in Dibai is a square tower, 59 feet (18 m 0) high, situated close north-eastward of the fort.

The north-eastern part of Daira is known as Ferij al Balush. There is a small minaret in Daira, 40 feet (12 m 2) high, situated about half a mile north-north-eastward of Dibai fort, which is fairly conspicuous

20 from north-westward and a useful mark when entering the creek.

Chart 3791, with plan of Dabei.

A stony flat, with depths of about 6 feet (1 m 8), extends about 6 cables north-eastward and one mile south-westward from the entrance to Khōr Dibai.

25 Anchorage may be obtained off Dibai, but the holding ground is bad and there is no shelter from the shamāl. Vessels should not anchor in depths of less than 4 fathoms (7 m 3). A good berth is in a depth of 6 fathoms (11 m 0) about one mile offshore, or in 5 fathoms (9 m 1), with the fort bearing 160° , distant about 13 cables. In 1911,

30 H.M.S. *Alert* anchored in the latter position but, with a westerly wind of force 4, the sea rose considerably in three hours and, having dragged both anchors, the vessel had to put to sea. Smaller vessels may anchor in a depth of about 4½ fathoms (8 m 2), with the fort bearing 156° distant about $11\frac{1}{2}$ cables.

35 In 1932, H.M.S. *Fowey* anchored in a depth of 7½ fathoms (13 m 7), with Dibai fort bearing 121° , distant 18 cables, and in this position rode out a moderate shamāl, the force of wind being 6-7, with a heavy swell.

Khōr Dibai.—This inlet is entered about half a mile northward of the fort in Dibai ; its western entrance point is low and sandy, and from it a spit, which dries one foot (0 m 3) at its outer end, extends about 4 cables north-eastward. The entrance, which is reported to be constantly changing and is much obstructed by the stony flat, has a depth in it of about one foot (0 m 3), the bottom in places being rocky.

45 In 1933, the minaret in Daira bearing 177° , open its own width eastward of the house with a castellated roof situated nearly a cable northward of it, led over the bar. The channel winds southward and passes close to the western entrance point. A spit extends towards Dibai from the point situated about 3 cables southward of, and on the opposite

50 side of, Khōr Dibai to the western entrance point. At the point on the eastern side, the inlet turns eastward between the town and its suburb and is there about a cable wide with depths of from 8 to 19 feet (2 m 4 to 5 m 8) in the fairway. The Customs jetty is situated on the southern side of Khōr Dibai about three-quarters of a cable northward of Dibai

Chart 3791, with plan of Dabī.

fort (*Lat. 25° 16' N., Long. 55° 18' E.*), and is reported to have a depth of 3 feet (0^m9) alongside. Khōr Dibai extends several miles south-eastward, but above the town, is only used by fishermen. Several ferries ply between Daira and the towns opposite.

Chart 3707.

Coast.—The coast between Dibai and Abu Dhabi, about 70 miles south-westward, is, except for a small village, at which there are some date trees, situated about 4 miles south-westward of Dibai, quite barren, uninhabited, and very low and uniform in appearance ; here 10 and there tufts of coarse grass grow on hillocks, separated by creeks, or, in places, by extensive swamps ; there is no tree larger than a mangrove bush.

Landing unarmed on the mainland between Dibai and Abu Dhabi is not recommended, for it is often visited by Bedouin from the interior. 15

Jabal al 'Ali, about 17 miles south-westward of Dibai and about 3 miles inland, is a flat-topped hill, 220 feet (67^m1) high, which rises gradually from either end ; it is the only landmark on or near this part of the coast. See view on chart 2837a.

Ras Hasa, about 30 miles south-westward of Dibai, is a small rocky 20 point which projects slightly from the line of the coast ; it shows as a small dark patch in the white sand, but can only be identified when close inshore. Between Dibai and Ras Hasa the soundings are regular, depths of 3 fathoms (5^m5), fine sand, being found at a distance of about 8 cables offshore.

About 5 miles south-westward of Ras Hasa, and similar to it, is Ras Kantūt. Khōr al Ghanādha, entered about 3 miles south-westward of Ras Kantūt, is marked by mangrove bushes at its mouth ; prior to 1870 it was reported to be easily entered by large boats. About 2 miles farther south-westward is Ghurābi, a smaller inlet ; 30 thence to Abu Dhabi there is a succession of inlets, the majority of which are inter-connected with merely narrow strips of sand between them and the sea. Some of these inlets have deep water within, though their entrances are very shallow, and the whole form extensive swamps and backwaters which extend inland for many miles. 35

Ras Hanjūra (Hanyūra), about 6½ miles south-westward of the mouth of Ghurābi inlet, is the low sandy northern entrance point of a shallow bay of the same name, the shores of which are intersected by many creeks. Maraifjain, about 4 miles south-westward of Ras Hanjūra, is the low sandy southern entrance point of Hanjūra bay. Both points 40 can be identified at a distance of about 5 miles. A small cliff, with a slightly overhanging top, stands at the head of Hanjūra bay and is the southern end of a small tableland from 20 to 30 feet (6^m1 to 9^m1) high ; it can be identified at a distance of about 7 miles and serves as a guide to the bay. See view on chart 2837a.

Haddat Thalei is an extensive reef which, commencing near Ras Hasa, fringes the coast to a position about 2½ miles south-westward of Abu Dhabi fort and in the vicinity of Maraifjain extends offshore for a distance of probably 6 miles. There are depths of 5 and 6 fathoms (9^m1 to 11^m0) close outside this reef and soundings are not a good guide 50 when approaching it as the bottom is uneven. Prior to 1870 the natives stated that there was a boat channel inside the reef which was used by them during a shamāl.

Ras al Ghurab (*Lat. 24° 37' N., Long. 54° 29' E.*), about 10 miles

Chart 3791, plan of Dabai.

short distance inland on the southern side of Khōr Dibai (Dabei), and from it a date grove extends about 2 miles south-westward, terminating in a detached clump.

5 Daira is a large suburb consisting of mat huts, amongst which stand a number of well-built houses, most of which latter have square towers with pillared tops ; it stands on the north-eastern side of Khōr Dibai, on a point formed by a sharp bend in the creek. Shandagha (Shendagha) is a suburb of Dibai and is situated on the spit which forms

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20 from north-westward and a useful mark when entering the creek.

Chart 3791, with plan of Dabai.

A stony flat, with depths of about 6 feet (1^m8), extends about 6 cables north-eastward and one mile south-westward from the entrance to Khōr Dibai.

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Khōr Dibai.—This inlet is entered about half a mile northward of the fort in Dibai ; its western entrance point is low and sandy, and from it a spit, which dries one foot (0^m3) at its outer end, extends about 4 cables north-eastward. The entrance, which is reported to be constantly changing and is much obstructed by the stony flat, has a depth in it of about one foot (0^m3), the bottom in places being rocky.

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50 side of, Khōr Dibai to the western entrance point. At the point on the eastern side, the inlet turns eastward between the town and its suburb and is there about a cable wide with depths of from 8 to 19 feet (2^m4 to 5^m8) in the fairway. The Customs jetty is situated on the southern side of Khōr Dibai about three-quarters of a cable northward of Dibai

Chart 3791, with plan of Dabī.

fort (*Lat. 25° 16' N., Long. 55° 18' E.*), and is reported to have a depth of 3 feet (0^m9) alongside. Khōr Dibai extends several miles south-eastward, but above the town, is only used by fishermen. Several ferries ply between Daira and the towns opposite.

5

Chart 3707.

Coast.—The coast between Dibai and Abu Dhabi, about 70 miles south-westward, is, except for a small village, at which there are some date trees, situated about 4 miles south-westward of Dibai, quite barren, uninhabited, and very low and uniform in appearance; here 10 and there tufts of coarse grass grow on hillocks, separated by creeks, or, in places, by extensive swamps; there is no tree larger than a mangrove bush.

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Jabal al 'Ali, about 17 miles south-westward of Dibai and about 3 miles inland, is a flat-topped hill, 220 feet (67^m1) high, which rises gradually from either end; it is the only landmark on or near this part of the coast. *See* view on chart 2837a.

Ras Hasa, about 30 miles south-westward of Dibai, is a small rocky 20 point which projects slightly from the line of the coast; it shows as a small dark patch in the white sand, but can only be identified when close inshore. Between Dibai and Ras Hasa the soundings are regular, depths of 3 fathoms (5^m5), fine sand, being found at a distance of about 8 cables offshore.

25

About 5 miles south-westward of Ras Hasa, and similar to it, is Ras Kantūt. Khōr al Ghanādha, entered about 3 miles south-westward of Ras Kantūt, is marked by mangrove bushes at its mouth; prior to 1870 it was reported to be easily entered by large boats. About 2 miles farther south-westward is Ghurābi, a smaller inlet; 30 thence to Abu Dhabi there is a succession of inlets, the majority of which are inter-connected with merely narrow strips of sand between them and the sea. Some of these inlets have deep water within, though their entrances are very shallow, and the whole form extensive swamps and backwaters which extend inland for many miles.

35

Ras Hanjūra (Hanyūra), about 6½ miles south-westward of the mouth of Ghurābi inlet, is the low sandy northern entrance point of a shallow bay of the same name, the shores of which are intersected by many creeks. Maraifjain, about 4 miles south-westward of Ras Hanjūra, is the low sandy southern entrance point of Hanjūra bay. Both points 40 can be identified at a distance of about 5 miles. A small cliff, with a slightly overhanging top, stands at the head of Hanjūra bay and is the southern end of a small tableland from 20 to 30 feet (6^m1 to 9^m1) high; it can be identified at a distance of about 7 miles and serves as a guide to the bay. *See* view on chart 2837a.

45

Hadd at Thalei is an extensive reef which, commencing near Ras Hasa, fringes the coast to a position about 2½ miles south-westward of Abu Dhabi fort and in the vicinity of Maraifjain extends offshore for a distance of probably 6 miles. There are depths of 5 and 6 fathoms (9^m1 to 11^m0) close outside this reef and soundings are not a good guide 50 when approaching it as the bottom is uneven. Prior to 1870 the natives stated that there was a boat channel inside the reef which was used by them during a shamāl.

Ras al Ghurab (*Lat. 24° 37' N., Long. 54° 29' E.*), about 10 miles

Chart 3707.

south-westward of Ras Hanjūra, is a rocky point near which are some low sand hills ; the edge of the reef is about 3 miles from the point. There is an inlet at Ras al Ghurab which is reported to be extensive and 5 deep inside ; it was also stated prior to 1870 that the depths were greater in its entrance than in any other inlet on the coast. Ras Laffān, about 8 miles south-westward of Ras al Ghurab, is a low point on the northern side of an inlet which trends southward and joins the great backwater southward of Abu Dhabi.

10. Chart 2837a, plan of Abu Dhabi.

Abu Dhabi.—Shoals.—This town consists for the most part of huts and extends along the coast for a distance of nearly 2 miles. In the town there is a small fort, partially surrounded by trees, with six towers close together, on one of which is the flagstaff. A small tower 15 stands on the beach, where there are also several conspicuous stone buildings, one of which is erected on the low sandy point which projects slightly in a north-westerly direction from the town.

The coast in the vicinity of Abu Dhabi is very low and the beach 20 is of white sand ; the only landmarks are the fort, and a tall, conspicuous white minaret about half a mile north-eastward of it. A minaret is situated about half a cable, and a flagstaff about 2 cables, northward of the fort. (*See* view facing page 173). There are a few stunted trees about one mile inland of the town.

A shoal, with depths of from $1\frac{1}{2}$ to 3 fathoms (2 m 7 to 5 m 5), extends 25 $1\frac{1}{2}$ miles north-westward from a position about $1\frac{1}{2}$ cables from the sandy point at the town. A reef of coral, over which the depths are from 3 to 6 feet (0 m 9 to 1 m 8), lies on the inshore end of the shoal, with a channel, in which there is a depth of 2 fathoms (3 m 7), between it and the coast.

30 A rock, over which there is a depth of 3 fathoms (5 m 5), lies nearly $2\frac{1}{2}$ miles north-westward of the fort at Abu Dhabi. A $2\frac{1}{2}$ -fathom (4 m 6) patch lies about $2\frac{1}{2}$ miles northward of the fort, and nearly one mile offshore, and eastward of it the depths appear to be shoal.

Chart 3707.

35 About $2\frac{1}{2}$ miles south-westward of the fort at Abu Dhabi is the mouth of a channel leading into a large backwater, $3\frac{1}{2}$ miles wide at its entrance and extending inland for a considerable distance. The greater part of the inlet is shallow and it has not been surveyed ; but in it are many deep channels and several islands. This inlet is connected by a channel with Khōr Laffān, thus Abu Dhabi becomes an island ; there is, however, one place which is fordable at low water.

Charts 2837a, plan of Abu Dhabi, 3707.

Anchorage.—Directions.—The anchorage for larger vessels is in depths of from 4 to 5 fathoms (7 m 3 to 9 m 1), with the fort bearing not 45 more than 122° distant from 2 to $2\frac{1}{2}$ miles ; but caution is necessary on account of the proximity of the 3-fathom (5 m 5) rock ; this position is open seaward and the holding ground is bad, consisting of coral which is bare in some places and only lightly covered with sand in others. The sandy point about 2 miles south-westward of the fort, is 50 of very white sand and is quite clearly defined when close to the anchorage ; it forms a useful mark by which to anchor. In 1931, H.M.S. *Penzance* anchored, in a depth of 3 fathoms (5 m 5), sand and coral, with the fort (*Lat.* 24° 29' N., *Long.* 54° 21' E.) bearing 123°, distant $8\frac{1}{2}$ cables ; this position was found to be too far northward.

Chart 748b.

Charts 2837a, plan of Abu Dhabi, 3707.

Small vessels with local knowledge, with a draught up to 12 feet (3^m7), may anchor between the coral reef and the coast, in a depth of about 2½ fathoms (4^m6), with the fort (*Lat. 24° 29' N., Long. 54° 21' E.*) bearing 174°, distant about 6 cables; this anchorage is sheltered by the reef, but it is usually fully occupied by native craft. 5

A vessel approaching Abu Dhabi from north-eastward should give Hadd at Thalei a wide berth.

A vessel approaching from northward should first make Jazirat Sir Abu Nu'air (page 168), its summit should be brought to bear 356° 10 and kept so, course 176° being made good after losing sight of it, care being taken to avoid the 3½-fathom (6^m4) patch, situated about 14½ miles northward of Abu Dhabi fort (*see page 169*). The depths are irregular which cause considerable overfalls. The tidal streams set north-eastward and south-westward and probably attain a rate of 15 about one knot.

Jabal Fatasia, about 8½ miles south-south-westward of the fort at Abu Dhabi, when first seen from seaward appears dark in colour, but on nearer approach the white sand, of which its lower part consists, becomes visible. 20

A good lookout should be kept from aloft, for there are depths of 8 fathoms (14^m6) close to the reefs; the reefs north-eastward of Abu Dhabi should be given a good berth. Having identified the fort, anchorage may be obtained as previously directed.

The inner anchorage may be approached with the fort bearing 122°; 25 this will lead close south-westward of the coral reef which shows up well; the reef may be rounded closely and anchorage obtained as previously directed; the afternoon is the best time for entering. There is a passage, with a depth of 2 fathoms (3^m7), leading to the inner anchorage from northward, but local knowledge is necessary. 30

Landing, when the swell is moderate, can be effected close north-eastward of the low sandy point half a mile northward of the fort; it is sheltered by the reef and the beach is fairly steep-to.

Charts 3707, 2837a, b.

GREAT PEARL BANK.—This extensive bank, the northern limit of which is in depths of 20 fathoms (36^m6), fills the great bight in the southern part of the Persian gulf. The eastern limit of the pearl fishery is north-westward of Shārja, and its northern boundary trends in a general westerly direction to Jazirat Halūl (page 188), passing about 20 miles northward of Jazirat Sir Abu Nu'air (page 168); from 40 Jazirat Halūl it trends north-westward to a position about 35 miles north-north-eastward of Ras Rākān (page 190). Most of the pearl banks known to the Arabs (*see page 6*) are situated southward and south-westward of this line.

The depths on the Great Pearl bank average from 10 to 15 fathoms 45 (18^m3 to 27^m4), but in places there are depths of from 20 to 25 fathoms (38^m6 to 45^m7).

Many shallow knolls, over which the depths are from 3 to 9 fathoms (5^m5 to 18^m5), lie on the bank, and these are the pearl banks proper. On all the pearl banks the depths are irregular, in many places changing 50 suddenly by as much as 2 or 3 fathoms (3^m7 or 5^m5). Extensive reefs, with depths of from 3 feet to 3 fathoms (0^m9 to 5^m5), and in places with channels or open water inside them, lie within 45 miles of the

Chart 748b.

Chart 3707, 2837a, b.

coast ; the bottom is stony or broken coral, and they show up well, except on cloudy days or when the sun is ahead.

In places, especially about 35 miles north-westward of Jazirat Sir Abu Nu'air (*Lat. 25° 13' N., Long. 54° 14' E.*), there are heavy overfalls, so that, the eye being the only guide, it is not safe to be under way after dark when near or within the great reefs, and a good lookout from aloft is indispensable.

Many islands, both close to the coast and far offshore, lie on the bank ; some are high, most of them have low projecting sandy points at their south-eastern ends, and many are barren. With the exception of Dalma (page 177) none have permanent inhabitants, though they are frequented by the pearl boats during the summer and by fishermen from Abu Dhabi during the winter.

25 Caution.—Tidal streams.—Pilotage.—Extreme care must be exercised when on the Great Pearl bank, for the tidal streams are strong and uncertain, and the bank has been incompletely surveyed. When southward of the parallel of $25\frac{1}{2}$ ° N. and westward of the meridian of $53\frac{1}{2}$ ° E., particular caution is required, for the safety of the vessel depends chiefly upon a vigilant lookout being maintained. Sounding affords little or no guide when approaching the islands and reefs. A vessel with a draught of more than 10 feet (3 m 0) should not be under way after dark anywhere in the above area. See also on page 209.

26 From observations made by H.M.S. *Crocus*, in 1924, it would appear that, between Jazirat Sir Abu Nu'air and a position midway between that island, Jazirat Sirri, and Jazirat Bu Müsa, the tidal streams set eastward and westward at a rate of about three-quarters of a knot ; that between Jazirat Sir Abu Nu'air and the meridian of $53^{\circ} 10'$ E. **20** they set east-south-eastward and west-north-westward at a rate of about half a knot ; and that between the meridian of $53^{\circ} 10'$ E. and Jazirat Halül they set southward and northward at a rate of about a quarter of a knot.

A vessel visiting the coast, or navigating within the reefs should **35** have a pilot on board.

The best pilots for the coast are to be obtained at Abu Dhabi.

Chart 3452, plan of Jazirat Sir Bu Na'air.

Jazirat Sir Abu Nu'air.—Anchorage.—Jazirat Sir Abu Nu'air (Sir Bu Na'air), 44 miles northward of Abu Dhabi, is composed chiefly **40** of small volcanic hills, except its south-eastern extremity, which is a very low sandy point. The summit of the island is a table-topped peak which rises to an elevation of 240 feet (73 m 2) near the southern end of the hills and is fairly conspicuous, except from northward. See view on chart 2837a.

45 The island is fringed with a reef which extends from 2 to 5 cables offshore. Two rocks, awash, lie about 4 cables off the northern end of the island. The south-eastern point (*Lat. 25° 12' N., Long. 54° 15' E.*), being low, must be given a good berth at night. There is a flagstaff on this point. The soundings are not a good guide when approaching **50** the island.

The island is uninhabited, but on it are a few wild cats, some sea birds, and curlew. It is barren, nothing but brushwood growing on it. Iron ore and some sulphur are reported to exist on the island.

During the pearl fishery, the island is visited by numbers of boats,

Chart 748b.

Chart 3452, plan of Jexirat Sir Bu Na'air.

in winter, a few fishing boats usually make it their headquarters, and temporary huts are erected for their families.

Anchorage, sheltered from the shamāl but exposed to the nashi, may be obtained on the eastern side of the island, in a depth of about 13 fathoms (23^m8), about half a mile offshore, with the peak bearing 275°, and the low south-eastern point 202°.

In 1935, H.M.S. *Bideford* obtained anchorage, sheltered from the nashi, in a depth of 4 fathoms (7^m3), about 3 cables offshore with the peak bearing about 345°.

Chart 3707.

Dangers in south-eastern part of Great Pearl bank.—Rak az Zakum, with a least depth of 15 feet (4^m6), is a pearl bank lying about 36 miles west-north-westward of Abu Dhabi; it is not marked by discolouration, and soundings give little guide when approaching it.

Southward of Rak az Zakum, between that bank, Abu Dhabi, and Rak al Hajji (page 171) the area has been imperfectly sounded. In many places there are heavy overfalls. Three shoals, lying respectively about 12 miles south-westward, 8 miles southward, and 10 miles south-south-eastward of the shoalest part of Rak az Zakum, were reported in 1927; they have not been examined and their positions are only approximately known. A shoal, with a depth of 27 feet (8^m2), lies eastward of the foregoing, about 22 miles west-north-westward of Abu Dhabi fort. A shoal, the position of which is approximate, was reported, in 1935, to lie about 18 miles west-north-westward of the fort.

A shoal, with a depth of 21 feet (6^m4), the position of which is approximate, was reported, in 1934, to lie about 14½ miles northward of Abu Dhabi fort. A shoal, with a depth of 21 feet (6^m4), the position of which is approximate, was reported, in 1926, to lie about 11 miles southward of the shoalest part of Rak az Zakum. A 5-fathom (9^m1) patch lies about 27 miles westward of Abu Dhabi fort.

COAST.—Dangers.—The southern shore of the Persian gulf is low and sandy or stony, with here and there hills of rock or sand of moderate height, but there are few, if any, distinctive features; it is entirely barren and desolate. From Abu Dhabi to Al Waqra (page 184), about 155 miles west-north-westward and about 60 miles south-south-eastward of Ras Rākān, there are neither villages, houses, nor permanent inhabitants. The coast is occasionally visited by Bedouin who might attack a small unarmed party; but it is seldom visited by Europeans. Reefs, on which are many low islands, lie from 10 to 30 miles off it; some of the islands are of considerable size and overgrown with mangroves.

In the eastern part of this coast there are many creeks and backwaters, and channels through and between the reefs which have been only partially examined. The land is a stony desert, with small detached groups of volcanic hills; on the coast are low cliffs. The apparent coast line, for 30 miles south-westward of Abu Dhabi (*Lat.* 24° 29' *N.*, *Long.* 54° 21' *E.*), is formed by a number of low islets with creeks running in between, and meeting behind them, thus detaching them from the mainland which lies at some considerable distance within them and has not been examined. Many of the islets, and the mainland behind them, are resorted to by the Arabs and the creeks are

Chart 3707.

visited by fishermen; all the creeks are reported to have shallow entrances and greater depths inside.

The tidal streams are reported to be strong in places; particularly round the points of the islands, through the narrow channels, and between the reefs.

Jazirat al Bahrāni, on the south-western side of the entrance of the backwater southward of Abu Dhabi, is a low sandy island with some mangroves on it.

10 Jabal Abu Kashāsha is a small hill on the island about one mile southward of Jazirat Al Bahrāni. Ras al Kahf (Kahaf), about 7 miles south-westward of the south-western extremity of Jazirat al Bahrāni, is a flat-topped rocky point, comparatively high, and probably a part of the mainland. Umm al Majārib and Jazirat Qantar (Kantür) are low islands, $3\frac{1}{2}$ and 5 miles, respectively, south-south-westward of Ras al Kahf; they are covered with mangroves and are separated from each other and from the mainland, by small creeks. The islands mentioned above are fringed by a reef which extends about 3 miles north-westward from Jazirat Bahrāni and 8 miles in that direction from Jazirat Qantar.

20 Khōr Qantar (Kantur), a channel through the reefs, is about one mile wide at its entrance, situated about 23 miles west-south-westward of Abu Dhabi. It trends southward for about 8 miles and then divides, one part extending eastward southward of Jazirat Qantar, and the other westward southward of Jazirat as Salāli (*see below*).

25 There are depths of 2 fathoms ($3^{\text{m}}7$) in the entrance channel and 4 fathoms ($7^{\text{m}}3$) farther in.

Bazm reef.—Bazm (Bazam) reef, forming the northern side of Khōr al Bazm (page 171), also forms the western side of Khōr Qantar, whence it extends about 53 miles westward. The northern edge of this reef lies from 12 to 17 miles off the mainland and is only charted approximately. Soundings are no guide when approaching it for there are depths of from 5 to 10 fathoms ($9^{\text{m}}1$ to $18^{\text{m}}3$) both close to it and at a distance of 15 miles from it.

A chain of islands, usually called collectively Bazm (Bazam), though each island has its own proper name, extends along the southern edge of the reef.

Jazirat as Salāli, the easternmost island on Bazm reef, is low, except near its north-eastern end where there is a hill. Westward of the island, there is a channel into Khōr al Bazm which is used by boats at high water. Jazirat Abu al Abyadh, about $1\frac{1}{2}$ miles westward of Jazirat as Salāli, is the largest on Bazm reef and on its western part are low sand hills. Al Junaina, about $4\frac{1}{2}$ miles westward of the western extremity of Jazirat Abu al Abyadh and one mile inside the southern edge of the reef, is a rocky islet in the vicinity of which are a number of detached rocks. A rocky islet lies on the southern edge of the reef, about 5 miles westward of Al Junaina (*Lat. $24^{\circ} 12' N.$, Long. $53^{\circ} 29' E.$*), with a smaller islet about $1\frac{1}{2}$ miles north-north-westward of it.

Al Fiha is a low island about 9 miles west-north-westward of Al Junaina, and close westward of the former is another island; both lie on the southern side of Bazm reef.

Hālat al Hail is an islet on the northern edge of Bazm reef, about 8 miles north-eastward of the north-eastern extremity of Al Fiha. A shoal, with a depth of 13 feet ($4^{\text{m}}0$), lies about one mile north-eastward of Hālat al Hail.

Chart 3765.

Bazm al Gharbi, the westernmost of the islands on Bazm reef, is low and partly covered with mangroves ; it lies on the southern edge of the reef and about 3 miles within its western end.

Reideim, the north-western portion of Bazm reef, lies within about 6 miles northward of Bazm al Gharbi ; it is probably detached.

Chart 3707.

Rak al Hajji and Bu Tini.—These two extensive shoals lie in the approach to Khōr al Bazm, northward of the western half of Bazm reef. Rak al Hajji has not been surveyed, but there are a few sand banks on it, which dry. Hālat al Mubarraz is a sandy islet, about 3 feet (0^m9) high, lying on the southern edge of Rak al Hajji, about 4 miles north-north-westward of Hālat al Hail.

Khōr Bashūbar, the channel between Rak al Hajji and Bazm reef, is about 1½ miles wide with depths of from 4 to 8 fathoms (7^m3 to 15 14^m6) in the fairway.

The tidal streams, setting eastward and westward through Khōr Bashūbar, are strong at springs.

Charts 3765, 3707.

Bu Tini, about 9 miles north-westward of Rak al Hajji, nearly 20 dries for the greater part, and on it are several sand banks which dry. On this, and on many other shoals on the Great Pearl bank, the fishermen wade about, searching for pearl oysters, far from their boats.

Khōr Halj is the clear channel between Bu Tini, on the north-west and north, and Rak al Hajji and Reideim, on the south-east and south ; it appears to have a least width of about 5 miles, with depths of from 5 to 8 fathoms (9^m1 to 14^m6) in the fairway.

Chart 3707.

Directions.—Khōr Halj is navigable by day in clear weather. 30 The dry banks on Bu Tini can be seen from aloft at some distance from the shoal and Bazm al Gharbi is visible from aloft when in mid-channel.

To pass eastward through Khōr Halj, a vessel should keep on the Bu Tini side, with the sand banks of that shoal in sight until she has 35 passed it ; a good lookout should be kept for the pale green water on Rak al Hajji. To pass through Khōr Bashūbar, a vessel should steer eastward from a position southward of Bu Tini with caution until Rak al Hajji is sighted ; she should then run along its southern edge passing about 2½ cables southward of Hālat al Mubarraz (*Lat. 24° 28' N., Long. 40° 53' 22' E.*).

These passages should only be used with the sun astern of the vessel.

Khōr al Bazm.—Khōr al Bazm (Bazam) is a blind channel except for boats (see page 170), leading east-south-eastward between Bazm reef and the mainland for about 45 miles. At its entrance it is about 45 6 miles wide, which decreases to about one mile at its head. The entrance to the inlet has not been surveyed.

The inlet is approached between Reideim and Ras Barūd, about 10 miles west-north-westward.

Chart 3765.

Ras Barūd is the north-eastern extremity of an extensive reef on the western side of the entrance to Khōr al Bazm ; on the reef are several sand banks which dry. Al'Isha, about 9 miles southward of Ras Barūd, is a low sandy islet at the south-eastern end of the reef.

50

Charts 2837a, b, 748b.

Chart 3765.

In the channel between Ras Barfūd and Al'Isha, on the west, and Bazm reef, on the east, there are several detached shoal patches.

Chart 3707.

5 The depths in the fairway of Khōr al Bazm decrease from 10 fathoms ($18^{\text{m}}3$) near its entrance, to about 2 fathoms ($3^{\text{m}}7$) at its head, but are somewhat irregular. The southern side of the khōr is bounded by a reef which extends as much as 6 miles from the mainland in its western part.

10 Directions.—Anchorage.—None but vessels of shallow draught should attempt to enter Khōr al Bazm and even they must keep a good lookout. The approach may be made passing either side of Rak al Hajji or Bu Tini. If passing northward and westward of Bu Tini, from a position not less than 5 miles southward of Az Zarqa (page 175) the summit of that island should be brought to bear 024° and kept so, astern, to pass westward of Bu Tini. When the sand banks of Bu Tini, which should be made, have all been passed, the vessel should steer southward, allowing for the tidal stream and keeping a good lookout for shoal patches. Al'Isha should be sighted, and when it bears 270° , course may be altered into Khōr al Bazm, a good lookout being kept for the south-western extremity of Bazm reef. When the south-eastern end of Bazm al Gharbi bears about 069° , it should be approached on that bearing and anchorage, completely sheltered by the reef, obtained about one mile offshore, in a depth of 5 fathoms ($9^{\text{m}}1$), clay 25 and good holding ground.

From this anchorage, two points of the mainland should be visible ; Ras as Sawāmi', about 8 miles south-south-eastward, is a light-coloured cliff, apparently about 50 feet ($15^{\text{m}}2$) high ; Ras Ijla (Jaliya), about 9 miles south-westward, is of somewhat similar appearance, and is so 30 named from its imaginary resemblance to a fort.

In proceeding up Khōr al Bazm, from southward of Bazm al Gharbi the depths appear to be more regular than in the approach, and the vessel should pass from about one to 2 miles southward of the islands on Bazm reef, being guided by the eye when approaching the edge of 35 the reef. The island between Al Fiha and Al Junaina, which is rocky, may be passed close-to.

Charts 3765, 3707.

Coast.—A low rounded point, $1\frac{1}{2}$ miles southward of which is Jabal Dhanna (Dhanni), 386 feet ($117^{\text{m}}6$) high, lies about 29 miles 40 westward of Ras as Sawāmi' ; there are several low cliffs between this hill and the coast. A reef fringes the point and extends about a mile north-eastward and $2\frac{1}{2}$ miles north-westward. Jazirat al Hamar, $9\frac{1}{2}$ miles eastward of the point, is the westernmost of several islets which lie on a reef extending from 4 to 6 miles offshore between that 45 islet and Ras as Sawāmi'.

Chart 3765, plan of Jazirat Yas.

Jazirat al Yās, and off-lying islets and dangers.—Jazirat al Yās, also known as Sir Beni Yas, lies with Ras al Khuzaïri (*Lat. $24^{\circ} 16' N.$, Long. $52^{\circ} 36' E.$*), its southern extremity, a low sandy point, 50 about $5\frac{1}{2}$ miles northward of Jabal Dhanna ; it rises in the middle to volcanic hills, 496 feet ($151^{\text{m}}2$) high. The most conspicuous summit, however, is Qarn al Khabta, 484 feet ($147^{\text{m}}5$) high and conical, situated on the south-eastern fringe of the hills and lighter in colour than the remainder ; on its summit is a cairn, 5 feet ($1^{\text{m}}5$) high. Mount Stewart,

Charts 2837a, b, 748b.



Abu Dhabi Fort, bearing 141° , distant 3 miles.

(Original dated 1934.)

Sydney hill.



Qarn al Khadra.
Mt. Stewart.

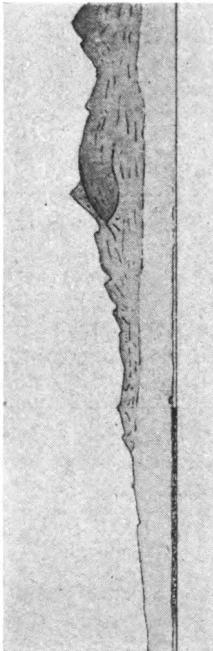
Jazirat al Yas from northward, distant about 5 miles.

(Original dated 1933.)

Highest foothill and
edge of cliffy coastline,
in line, bearing 191° .

Qarn al Khadra,
Bearing 193° ,
distant 7.2 miles.

Mount Stewart.



Mat hut.

Jazirat al Yas from north-north-eastward.

(Original dated 1934.)

Chart 3765, plan of Jazirat Yas.

483 feet ($147^{\text{m}}2$) high and black in colour, lies about 2 cables west-south-westward of Qarn al Khabta and is also surmounted by a small cairn; Sydney hill, 443 feet ($135^{\text{m}}0$) high, lies about a mile northward of Mount Stewart, and, being slightly detached, is conspicuous from westward. See view facing this page.

Stokes bluff, the eastern extremity of the island, is 71 feet ($21^{\text{m}}6$) high, but the coast on either side of the bluff is low; there are cliffs, from 7 to 48 feet ($2^{\text{m}}1$ to $14^{\text{m}}6$) high, round the northern and western sides of the island. From the southern limit of the hills the ground slopes down to a low sandy plain, covered with coarse scrub, for about 2 miles to Ras al Khuzairi.

There are two small villages on the island: Dhahar on the north coast and 'Awāfi on the west; Dhahar appears to be permanently inhabited and contains a few mud houses; the dhows belonging to the villagers are moored on the reef fringing that part of the coast. 'Awāfi, consisting of rush huts and tents, is inhabited during the winter months only. There is a small inlet in the fringing reef near 'Awāfi, with a least depth of one foot ($0^{\text{m}}3$), known as Khōr al Bab and which provides shelter for a few small dhows; it is marked by a small beacon 5 feet ($1^{\text{m}}5$) high.

Duwaissir is a small lagoon, situated at the south-eastern end of the island and provides excellent shelter for small craft; the entrance which is about half a cable wide, has a depth of 6 feet ($1^{\text{m}}8$) but inside there are depths of from 4 to 6 fathoms ($7^{\text{m}}3$ to $11^{\text{m}}0$).

With the exception of Ras al Buwaitir, the south-eastern extremity of the island is surrounded by a fringing reef extending from about one to 6 cables from the eastern side and for from 4 to 11 cables from the northern and western sides.

Jazirat Rashid, a flat, low, rocky islet, covered with coarse shrub, lies about $3\frac{1}{2}$ miles north-north-eastward of the northern extremity of Jazirat al Yās, and on the western end of the shoals extending northward and westward from Al'Isha. These shoals, several of which dry in the form of low sandy islets, have not been closely surveyed and it is extremely doubtful whether there is any navigable passage through them.

There is a cairn, 9 feet ($2^{\text{m}}7$) high, near the western extremity of Jazirat Rashid, and is a useful mark when approaching Jazirat al Yās anchorage.

Crabbe shoal, with a least depth of 24 feet ($7^{\text{m}}3$), lies about $2\frac{1}{2}$ miles north-westward of the cairn on Jazirat Rashid (*Lat.* $24^{\circ} 25' N.$, *Long.* $52^{\circ} 39' E.$). There are usually overfalls over this shoal.

The Ridge, with a least depth of 18 feet ($5^{\text{m}}5$), and steep-to, is a rocky spit extending about $1\frac{1}{2}$ miles south-westward from Jazirat Rashid; there are usually overfalls on the spit. A shoal, with a least depth of 24 feet ($7^{\text{m}}3$), lies nearly $1\frac{1}{2}$ miles west-south-westward of the cairn on Jazirat Rashid.

Harrison bank, with a least known depth of 16 feet ($4^{\text{m}}9$), but possibly less, lies about 2 miles northward of Jazirat al Yās; it is separated from the reef which fringes the northern side of this island by a channel about half a mile wide, with a least known depth of 27 feet ($8^{\text{m}}2$) in the fairway; this channel, however, has not been closely sounded and is not recommended.

Parks shoal, with a least depth of 26 feet ($7^{\text{m}}9$), lies $2\frac{1}{2}$ miles north-

Chart 3765, plan of Jazirat Yas.

westward of the north-western extremity of Jazirat al Yās ; except on its eastern side the shoal is fairly steep-to.

Jennings reef, part of which dries, is a coral reef lying about one mile south-south-eastward of Jazirat Rashid ; a narrow channel, not closely sounded, separates it from the reef fringing that island. Low sandy islets lie about 6 miles eastward and east-south-eastward of Jennings reef.

A sand bank, which dries, lies on the outer edge of the shoal which extends about a mile from the north-eastern side of Jazirat al Yās. A shoal, with a depth of 11 feet (3^m4) at its outer edge, extends about a mile from the middle of the eastern side of the same island. Lovejoy shoal, with a least depth of 10 feet (3^m0), lies $1\frac{1}{2}$ miles east-south-eastward of Stokes bluff ; there is a 16-foot (4^m9) patch about one mile east-south-eastward, and some rocks, awash, about 11 cables south-eastward of the bluff. A detached shoal, with a least depth of 10 feet (3^m0), lies about $1\frac{1}{2}$ miles southward of the bluff.

Bill islet, sandy, 3 feet (0^m9) high, and steep-to on its southern side, lies on the southern edge of a reef which extends about $1\frac{1}{2}$ miles northward, situated about 4 miles eastward of Stokes bluff ; a cairn stands on the islet.

Price shoal, with a least depth of 4 feet (1^m2), lies about $1\frac{1}{2}$ miles south-south-westward of Bill islet. Two patches, with depths of 11 and 12 feet (3^m4 and 3^m7), lie about 5 cables northward and $3\frac{1}{2}$ cables north-westward, respectively, of the shoalest part of Price shoal.

Marshall islet, a sandy islet 2 feet (0^m8) high, lies about $3\frac{1}{2}$ miles south-eastward of Ras al Buwaitir ; a reef extends about 2 cables from its northern and eastern sides, but it is steep-to on its south-western side.

A shoal, with depths of less than 6 feet (1^m8), extends about one mile south-south-eastward from Ras al Khuzaïri. Long reef, on which there are numerous coral heads, lies about midway between Ras al Buwaitir and the point on the mainland $1\frac{1}{2}$ miles northward of Jabal Dhanna (*Lat. 24° 10' N., Long. 52° 36' E.*). This area has not been closely surveyed, but it is considered that there is no safe channel between the southern end of Jazirat al Yās and the mainland.

Chart 3765.

Anchorage.—Directions.—Good anchorage may be obtained about 4 cables from the reef fringing Jazirat al Yās either in a depth of 8 fathoms (14^m6), grey clay, with Stokes bluff bearing 008° and Ras al Buwaitir, 255° ; or, in 9 fathoms (16^m5), mud and sand, with Qarn al Khabta in line with Ras al Buwaitir, bearing 339° and Ras al Khuzaïri, 259° .

45 A vessel should approach these anchorages from northward of Jazirat al Yās with Qarn al Khabta bearing 175° (*see page 176*).

Chart 3765, plan of Jazirat Yas.

When the cairn on Jazirat Rashid bears 147° she should steer for it on that bearing until the western edge of the cliffs close eastward of Dhahar village is in line with the 247-foot (75^m3) hill, situated about $3\frac{1}{2}$ cables north-eastward of Qarn al Khabta, bearing 191° (*see view facing page 173*), when she should keep these marks in line. As the hill may not be clearly distinguished until the transit is nearly reached, the bearing of Qarn al Khabta should be checked. This course leads

Chart 3765, plan of Jazirat Yas.

between Crabbe shoal and Jazirat Rashid and, subsequently, between Harrison bank and the Ridge, the last named being cleared when the cairn on Jazirat Rashid bears 049°.

The vessel should then steer for Bill islet, bearing 133°, and when Qarn al Khabta, which is conspicuous from eastward, bears 244°, she should steer about 175° until the same hill bears 285°, when she should alter course westward and steer with Bill islet astern, bearing about 053°.

Ras al Khuzairi, open southward of Ras al Buwaitir, just clears the 1 shoal depths southward of Lovejoy shoal, but the anchorage is best approached with the former point bearing 259°.

The channel described above has a depth of not less than 30 feet (9^m1), its shoalest part being on the south-eastern end of Crabbe shoal, and its narrowest part between Harrison bank and the 1 Ridge.

Vessels with a draught of more than 15 feet (4^m6) should not attempt the entrance with a visibility of less than 8 miles.

If proceeding to Duwaisir the vessel should close Ras al Buwaitir until the entrance is reached, when she should turn into the bay keeping 2 between the shoals on either hand which can easily be seen.

*Chart 3765.***OUTLYING ISLANDS AND DANGERS.—Jazirat az Zarqa.**

—Anchorage.—Jazirat az Zarqa (Zirko), about 39 miles north-eastward of Jazirat al Yās, rises to a fairly conspicuous peak, 527 feet 2 (160^m6) high, and is bare except for some grass and stunted brushwood. (See views N. and O on chart 2837b). The island is fringed by a reef which extends a short distance offshore, and a sand spit, which dries, extends from the southern point, which is low and sandy.

A shoal, with a depth of 18 feet (5^m5), lies about one mile north-north-westward of the island, and a shoal, with a depth of 15 feet (4^m6), lies about 1½ miles southward.

Anchorage may be obtained, in a depth of 4½ fathoms (8^m2), with the southern extremity of the island bearing between 248° and 270°, distant from 5 to 8 cables; the anchorage is sheltered from the shamāl, but some swell rolls in round the island.

The tidal streams between the southern end of the island and the shoal lying off it are strong at springs and cause ripples like breakers which extend in a northerly and southerly direction.

Jazirat al Qarnain.—This island lies about 11 miles west-north-westward of Jazirat az Zarqa (Lat. 24° 53' N., Long. 53° 03' E.). The southern part of the island is low, but at its northern end are three remarkable detached dark-coloured peaks, the highest of which has an elevation of 190 feet (57^m9). See view O on chart 2837b.

The island is too small to afford any protection from the shamāl. 4 The best landing is on a sandy beach on the western side of its southern extremity, the remainder of the island being fringed by a reef.

A spit, with a depth of 30 feet (9^m1) near its outer end, and from 11 to 18 feet (3^m4 to 5^m5) within, extends about 3 miles southward from the south-eastern end of the island. Several shoals, which have not been 5 examined, were reported, in 1927, to lie within 8 miles north-westward, 5 miles westward and 9 miles south-westward, respectively, of the island.

Charts 3707, 2837a, b, 748b.

Chart 3707.

Jazirat Däs.—**Anchorage.**—This island, about 12 miles northward of Jazirat al Qarnain, rises in its northern part to an elevation of 150 feet ($45^{\text{m}}7$), its southern part being low. There is very little fringing reef, but a spit, with a depth of 24 feet ($7^{\text{m}}3$) at its outer end, extends $2\frac{1}{4}$ miles southward from the island, and a 24-foot ($7^{\text{m}}3$) patch lies $1\frac{1}{4}$ miles south-eastward of the southern extremity of the island.

Anchorage may be obtained, in depths of from 5 to 8 fathoms ($9^{\text{m}}1$ to $14^{\text{m}}6$), about half a mile eastward of the south-eastern low sandy point of the island, but during a shamäl much swell would probably be felt there for the island affords but little shelter. Caution is necessary when approaching this anchorage for the depths rapidly decrease.

The best landing place is on the western side of the south-eastern point of the island.

Chart 3765.

Jazirat 'Ardhāna.—**Anchorage.**—Jazirat 'Ardhāna (Arzanah), about 25 miles northward of Jazirat al Yäs, is 207 feet ($63^{\text{m}}1$) high near its northern end, but its southern part is a plain. It is fringed by a reef except at its southern extremity, which terminates in a sandy spit, on the eastern side of which is the best landing.

Shoals, with depths of less than 3 fathoms ($5^{\text{m}}5$), lie within $4\frac{1}{4}$ miles north-north-eastward, $2\frac{1}{2}$ miles eastward, and $2\frac{1}{4}$ miles southward of the island. This shoal area prevents any but shallow draught vessels closing the island from south-eastward, but it breaks the force of the sea during the shamäl and fairly comfortable anchorage may be obtained, in a depth of 8 fathoms ($14^{\text{m}}6$), sand, in a position with the summit of the island bearing 319° , distant about $3\frac{1}{2}$ miles. It should be approached with caution, however, as the depths decrease abruptly from 6 to $2\frac{1}{4}$ fathoms ($11^{\text{m}}0$ to $4^{\text{m}}6$) and the shoals are not easily seen, even in calm weather.

Two shoals, one with a depth of 21 feet ($6^{\text{m}}4$) and the other with 24 feet ($7^{\text{m}}3$), lie $7\frac{1}{4}$ miles north-eastward and $7\frac{1}{4}$ miles eastward, respectively, of the island.

A 28-foot ($8^{\text{m}}5$) patch and a 31-foot ($9^{\text{m}}4$) patch lie about $3\frac{1}{4}$ and 5 miles respectively, southward of the southern extremity of the island, and are probably a continuation of the shoal extending from that point. A 34-foot ($10^{\text{m}}4$) patch lies about $5\frac{1}{2}$ miles south-eastward of the same point.

Creagh shoal, a typical atoll formation, with a least depth of 27 feet ($8^{\text{m}}2$), lies about 10 miles south-eastward of Jazirat 'Ardhāna (*Lat. $24^{\circ} 47' N.$, Long. $52^{\circ} 34' E.$*).

Directions.—A vessel approaching Jazirat al Yäs from northward should pass about midway between Jazirat az Zarqa and Jazirat al Qarnain on a southerly course until the summit of Jazirat az Zarqa bears 063° , when she should steer with this island astern on that bearing, passing north-westward of Creagh shoal; the summit of Jazirat Dalma (page 177) should be subsequently sighted right ahead if the weather is clear. When Jazirat 'Ardhāna bears 355° , she should alter course southward and keep it astern on that bearing, and Qarn al Khabta will be sighted right ahead; thence if proceeding to the anchorage off the south-eastern side of Jazirat al Yäs she should follow the directions given on page 174.

Jazirat Daiyina.—**Anchorage.**—This island, about 12 miles

Chart 3765.

north-westward of Jazirat 'Ardhāna, is flat and sandy, and scantily covered with grass; the highest part is a solitary black rock at its northern end, about 9 feet (2^m7) high. The island is fringed by a reef which extends about $5\frac{1}{2}$ cables offshore. 5

An anchorage may be obtained, in a depth of 5 fathoms (9^m1), about 7 cables off the southern extremity of the island; it is more sheltered from the shamāl than might be expected from the small size of the island.

An extensive shoal, with depths of from 3 to 4 fathoms (5^m5 to 10^m3), lies within about 7 miles eastward of Jazirat Daiyina.

Chart 3707.

Several pearl banks, with depths of from $3\frac{1}{2}$ to 5 fathoms (6^m4 to 9^m1) and the positions of which can best be seen on the chart, lie between 8 and 16 miles northward of the island. 16

A coral reef was observed in 1911 about 7 miles northward of the island; it appeared to extend for about 3 miles in a northerly and southerly direction, and to be nearly awash.

Jazirat Shurā'awa.—Anchorage.—This islet, about 9 miles west-north-westward of Jazirat Daiyina, has a number of small hummocks on it, about 40 feet (12^m2) high, which lie in an easterly and westerly direction; the middle of the islet is low. There is little or no fringing reef, but a shoal extends about half a mile south-eastward from the islet. There is a good sandy beach on which turtles may be caught. 20

A detached rocky pinnacle, about 8 feet (2^m4) high, lies about one mile northward of the islet. 24

The depths between Jazirat Daiyina (*Lat. $24^{\circ} 57' N.$, Long. $52^{\circ} 23' E.$*) and Jazirat Shurā'awa are very irregular, and several reefs were reported, in 1911, by H.M.S. *Philoctete* to lie between these islands; the depths in the approach from southward are also irregular. The least depth in the approach from northward, with the islet bearing between 180° and 190° , appears to be 5 fathoms (9^m1), but there may be reefs in this area. A one-fathom patch lies on the southern side of Qarn al 'Ashairiq, an extensive pearl bank about $5\frac{1}{2}$ miles north-westward of Jazirat Shurā'awa. 35

Fair anchorage can be obtained during a shamāl, about 3 cables offshore on the southern side of the islet, in depths of 5 or 6 fathoms (9^m1 or 11^m0), sand; a vessel about 200 feet (61^m0) in length would swing into a depth of 4 fathoms (7^m3); there is no shelter farther out. 40

Chart 3452, plan of Jazirat Dalma.

Jazirat Dalma.—Anchorage.—This island, about 15 miles north-westward of Jazirat al Yās, is for the most part hilly but terminates southward in a very low narrow plain, which ends in a point. At a distance, the hills appear as one long tableland, with a small barn-shaped peak, 220 feet (67^m1) high near the northern end. A village with a tower stands on the western side of the plain and can be seen from eastward across the plain. The island is much visited by the pearl boats. 45

Except at its southern and eastern extremities, a reef fringes the island to a distance of about $2\frac{1}{2}$ cables offshore; from its eastern extremity it extends nearly three-quarters of a mile offshore, with depths of 3 fathoms (5^m5) at its outer edge. 50

The depths in the vicinity of the island are irregular. A shoal,

Chart 3452, plan of Jazirat Dalma.

with a depth of 21 feet (6^m4), sand, lies about $8\frac{1}{2}$ cables offshore eastward of the village, but its position is doubtful.

Halat Masuma is a sandy islet, about 2 feet (0^m6) high, lying about 5 $2\frac{1}{2}$ miles southward of the southern extremity of Jazirat Dalma ; it lies on a shoal which is steep-to, which extends about $1\frac{1}{2}$ miles south-south-westward and one mile in other directions. There is a narrow passage, with depths of from 12 to 18 feet (3^m7 to 5^m5) in the fairway, between the shoal and Jazirat Dalma. The tidal streams set strongly

10 eastward and westward through the passage.

Anchorage, well sheltered from the shamāl, may be obtained off Jazirat Dalma, in a depth of $6\frac{1}{2}$ fathoms (11^m9), about 4 cables south-eastward of the low sandy plain, with the southern house in the village bearing 289° , and the eastern extremity of the island, 011° . About 15 one cable inshore of this position the depths shoal rapidly from $5\frac{1}{2}$ to $3\frac{1}{2}$ fathoms (10^m1 to 6^m4). From eastward, the anchorage should be approached with the village bearing more than 282° . In 1931, H.M.S. *Hastings* anchored a little farther northward. Native boats lie on the western side of the point, off the village and close to the reef, where 20 they are sheltered from the shamāl by the south-western point of the island and are also protected from the nashi.

Chart 3707.

A rocky patch, with a depth of 3 fathoms (5^m5), and steep-to, lies about $5\frac{1}{2}$ miles south-westward of Halat Masuma (*Lat.* $24^\circ 25' N.$,

25 *Long.* $52^\circ 18' E.$), and a 5-fathom (9^m1) patch lies about 8 miles south-south-eastward of the islet.

A patch of discoloured water, over which the depth is apparently about 2 fathoms (3^m7), was reported, in 1914, to lie about 2 miles eastward of the island.

30 COAST.—Caution.—Between Jabal Dhanna (page 172) and Al Waqra, about 80 miles north-westward, the coast is most difficult and dangerous to approach on account of the many off-lying low islets and the extensive bight between them is much encumbered with shoals which have been imperfectly surveyed. Navigation is also dangerous 35 outside the shoals, westward of a line joining Jazirat Dalma and Jazirat Shurā'awa, for there the irregular nature of the bottom causes numerous overfalls. This locality should therefore be avoided ; even the Arabs do not visit it in any craft larger than their pearl boats.

Zabūt, an islet about 120 feet (36^m6) high, and faced with white 40 cliffs, lies close offshore about 9 miles south-westward of the point on the mainland close northward of Jabal Dhanna. Shoals lie within 8 miles northward of the islet, and a 2-fathom (3^m7) patch lies about 7 miles north-north-westward of it ; there is an extensive unsurveyed area in this vicinity, and vessels should give it a good berth.

45 Jabal Barāka rises to an elevation of about 250 feet (76^m2) a short distance inland of a low cliff about 8 miles south-westward of Zabūt. About 6 miles farther south-westward and about $2\frac{1}{2}$ miles inland is Jabal Wutaid, the termination of the low ranges of dark coastal hills which extend westward from Ras as Sawami' (page 172).

50 The district of Sabkha (Sabákhah) Matti extends from Jabal Wutaid to Ras as Sila, about 28 miles west-north-westward. It is mostly desolate, low, and partly swampy. It is difficult to approach or even to sight it, for foul ground extends from 4 to 6 miles offshore, and a

Chart 3707.

detached 3-fathom ($5^{\text{m}}5$) patch lies about $4\frac{1}{2}$ miles offshore, $14\frac{1}{2}$ miles west-north-westward of Ras Assāk, situated $6\frac{1}{2}$ miles west-south-westward of Jabal Barāka. The mainland is invisible from the edge of the foul ground. The Arabs state that it is the hottest part of the ⁵ gulf. Foul ground extends about $2\frac{1}{2}$ miles eastward from Ras as Sila'.

For about 13 miles northward of Ras as Sila' the coast consists of a succession of small rocky points; the land rises gradually to a level summit, about 100 feet ($30^{\text{m}}5$) high, falling to the coast in a series of small terraces or steps. This tableland is of light colour and sometimes ¹⁰ sparkles in the sunlight owing to the fragments of crystals embedded in its surface. Kassār al Baya is an islet on the coastal reef about 4 miles northward of Ras as Sila'. About 9 miles farther northward there is a small conspicuous table hill, 75 feet ($22^{\text{m}}9$) high, thence for one mile north-westward the coast consists of low, white cliffs, whence ¹⁵ it falls towards Ras Masheirib, a very low, rocky and shelving point, $1\frac{1}{2}$ miles farther. Between the 75-foot ($22^{\text{m}}9$) hill and Ras Masheirib (*Lat. $24^{\circ} 18' N.$, Long. $51^{\circ} 44' E.$*) the coast is fringed by a reef, which extends from 5 to 8 cables offshore.

Off-lying islands and dangers.—Anchorage.—Jazair al Yāsāt, ²⁰ about 15 miles east-south-eastward of Ras Masheirib, consists of two level islands, about 15 feet ($4^{\text{m}}6$) high, and bordered by cliffs, and three islets close southward of them. A small spit extends south-eastward from the southern islet, and a shoal patch lies about one mile north-westward of it.

There is a clear channel southward of the southern islet, about $2\frac{1}{2}$ miles wide, but the depths are irregular and vary from 4 to 11 fathoms ($7^{\text{m}}3$ to $20^{\text{m}}1$). A reef extends about 6 miles northward and north-eastward from the northern island of the group, and thence a chain of extensive reefs continues about 60 miles northward with no ³⁰ known ship channel through it, except that between Fasht al 'Odaid and Rak Kareinein. *See page 184.*

Anchorage may be obtained south-westward of Jazair al Yāsāt, with the southern islet bearing between 068° and 090° , distant about half a mile.

Westward and north-westward of Jazair al Yāsāt, along the coast and inshore of the extensive outlying reefs as far as Khōr al 'Odaid (page 181), the survey is more complete than that eastward of those islands; but it is probable that many undiscovered rocks and shoal patches exist there.

Mahamaliya, about 6 miles west-south-westward of the southern-most islet of Jazair al Yāsāt, is a light-coloured islet, from 15 to 20 feet ($4^{\text{m}}6$ to $6^{\text{m}}1$) high, which has a flat top with a notch in it, and is bordered by cliffs. A small detached patch, over which there is a depth of one fathom ($1^{\text{m}}8$), lies about one mile south-eastward of Mahamaliya.

Umm al Hatab, about 6 miles north-north-westward of Mahamaliya, is a low sandy islet on which are some tufts of coarse grass. It lies on a rocky reef, with several above-water rocks off its northern end; the reef extends about half a mile from the eastern and western sides of the islet, but the southern side is clear.

Naita, about 2 miles north-north-eastward of the 75-foot ($22^{\text{m}}9$) hill south-eastward of Ras Masheirib, is a low sandy islet on which are some tufts of coarse grass, and a few graves; several detached rocks lie off its northern end. The islet lies on the south-western edge of

Chart 3707.

an extensive reef which appears to be joined to that which extends northward from Jazair al Yāsāt. A spit extends about one mile south-eastward from Naita.

5 In the area southward of Naita and westward of Jazair al Yāsāt, the depths are irregular, and in places where they do not exceed 3 or 4 fathoms ($5^{\text{m}} 5$ or $7^{\text{m}} 3$) there are overfalls; in the deeper parts the bottom is mud, but the shoaler patches are of rock or sand.

Naita strait.—**Tidal streams.**—Naita strait is about 6 cables wide between the reef on which Naita lies and that which fringes the coast south-eastward of Ras Masheirib. The least depth in the fairway is about 4 fathoms ($7^{\text{m}} 3$), and it is the only known navigable passage leading northward inshore of the extensive reefs already mentioned. The greatest depth is on the Naita side of the strait, and when passing 10 that islet caution must be exercised, for a spit extends from the mainland nearly half-way across the channel; after passing Naita the strait widens. Foul ground extends about one mile north-westward from Ras Masheirib (*Lat. 24° 18' N., Long. 51° 44' E.*) and about $1\frac{1}{2}$ miles in the same direction from Naita; a detached patch lies about $3\frac{1}{2}$ miles 15 north-westward of the islet.

The tidal streams in the strait are strong and set north-westward and south-eastward, but the times of their turning are not known.

Coast.—Immediately westward of Ras Masheirib is the entrance to Dōhat an Nakhala; between the reefs extending from either side 20 of this inlet the fairway, with depths of from 2 to 5 fathoms ($3^{\text{m}} 7$ to $9^{\text{m}} 1$), is about half a mile wide, but two shoal patches in its entrance render it unsuitable for shipping.

Immediately westward of this inlet is Dōhat al Kawaisāt, the entrance to which is reported to be only 40 yards ($36^{\text{m}} 8$) wide between 25 the reefs on either side, with a depth of 3 fathoms ($5^{\text{m}} 5$). The narrowest part of the entrance is between the western shore and Al Fazāya; the latter is an islet bordered by cliffs, and at its northern end there is a plateau about 50 feet ($15^{\text{m}} 2$) high; it is light in colour as is the coast in the vicinity, and is connected by a shoal to the point separating the 30 two inlets.

Ras al Hazra, about 10 miles west-north-westward of Ras Masheirib, is very low, rocky, and shelving. Several rocky islets lie on the reef which extends about half a mile offshore between the entrance of Dōhat al Kawaisāt and Ras al Hazra. A shoal was reported, in 1935, 35 to lie about $3\frac{1}{2}$ miles south-eastward of Ras al Hazra and 2 miles offshore.

Khōr adh Dhuwaihīn is situated at the head of the bay which is entered between Ras al Hazra and Ras Bu Kamheiz, $12\frac{1}{2}$ miles north-north-westward. No information subsequent to that obtained during 40 the survey of 1823 is available concerning the bay, the shores of which consist, except in the vicinity of Khōr adh Dhuwaihīn, of low white hills; the bay is encumbered with shoal patches and the bottom is mud.

Ras Bu Kamheiz is the eastern low rocky point of the promontory 45 forming the south-eastern side of Khōr al 'Odaid. Fasht Umm Janna is a reef which lies with its outer edge about $2\frac{1}{2}$ miles eastward and northward of Ras Bu Kamheiz; a narrow channel leads north-westward close round the point between it and the reef.

Off-lying islets and dangers.—Fareijat are two islets, lying

Chart 3707.

northward and southward of one another about 2 miles apart, the southern being about 6 miles eastward of Ras al Hazra (*Lat. 24° 23' N., Long. 51° 35' E.*) ; they are about 20 feet (6^m1) high, table-topped, and light in colour. They lie at the south-western extremity of the great chain of reefs which extends northward and north-westward from Jazair al Yāsāt and appear to be connected by a shoal. 5

Jazair Ghāra is a group of flat-topped rocky islets, about 20 feet (6^m1) high, lying within about 5 miles north-westward of Ras al Hazra. Several shoal patches lie north-eastward of the group ; a 3-fathom 10 (5^m5) patch lies about 3½ miles northward of the largest islet of the group, and a shoal, reported in 1935, lies about the same distance farther northward. There is an extensive shoal, with depths of from 2 to 3 fathoms (3^m7 to 5^m5), lying within 3 miles north-westward of the group. Vessels should pass eastward of these shoals. 15

A detached shoal, with a depth of 2 fathoms (3^m7), lies about 2½ miles north-north-eastward of Ras al Hazra, and close northward of this shoal is an extensive shoal, with depths of from one to 3 fathoms (1^m8 to 5^m5). Vessels should pass westward of these shoals.

Caution is necessary when passing between the other shoals mentioned above and a good lookout is essential, for shoals may exist in the channel, in which the least depth appears to be 5 fathoms (9^m1). 20

Miyamāt entin, situated between 4½ and 6½ miles northward of the northern Fareijat, are three very low islands lying north and south on the extensive reef which extends northward from Fareijat. The area for over 15 miles eastward of Miyamāt entin, is reported to be encumbered with shoals with no passage between them, but it has not been examined. 25

Jazirat Kafāi, about 11 miles eastward of Ras Bu Kamheiz, is a low islet on which are some tufts of grass. A shoal extends about 2½ miles southward from the island, and another, which has not been examined and may be connected to the island, lies about 3 miles north-north-westward of it. There are several 5-fathom (9^m1) patches, and one 4-fathom (7^m3) patch, westward of these shoals. 30

Machāsib, about 7 miles north-eastward of Jazirat Kafāi, is a flat rocky islet, about 7 feet (2^m1) high, fringed by a reef extending about 1½ miles from it. A channel about one mile wide, in which there are depths of from 4 to 5 fathoms (7^m3 to 9^m1), separates the fringing reef from an extensive shoal south-eastward of it, the limits of which have not been determined. 35

Khōr al 'Odāid.—Dangers.—This inlet trends in a south-westerly direction along the north-western side of the promontory of which Ras Bu Kamheiz is the eastern extremity. The south-eastern shore of the inlet consists of rocky hills, but on the north-western side are sand hills named Niqa al Mahākaf, from 50 to 80 feet (15^m2 to 24^m4) high, round in shape, white, and barren. The khōr is frequented in winter by fishermen who remain some months ; very fine mullet are to be caught. 40

Jabal al 'Odāid is a ridge of hills on the eastern side of the inlet, the north-eastern end of which rises immediately within the low cliffs of the southern entrance point of the khōr (*Lat. 24° 37' N., Long. 51° 27' E.*) to an elevation of 190 feet (57^m9) ; it is light in colour, and has a table top, the edge of which is indented ; about 1½ miles farther south-westward, the ridge is about 300 feet (91^m4) high. 45

Chart 3707.

an extensive reef which appears to be joined to that which extends northward from Jazair al Yāsāt. A spit extends about one mile south-eastward from Naita.

5 In the area southward of Naita and westward of Jazair al Yāsāt, the depths are irregular, and in places where they do not exceed 3 or 4 fathoms ($5^{\text{m}} 5$ or $7^{\text{m}} 3$) there are overfalls; in the deeper parts the bottom is mud, but the shoaler patches are of rock or sand.

Naita strait.—*Tidal streams.*—Naita strait is about 6 cables

10 wide between the reef on which Naita lies and that which fringes the coast south-eastward of Ras Masheirib. The least depth in the fairway is about 4 fathoms ($7^{\text{m}} 3$), and it is the only known navigable passage leading northward inshore of the extensive reefs already mentioned. The greatest depth is on the Naita side of the strait, and when passing 15 that islet caution must be exercised, for a spit extends from the mainland nearly half-way across the channel; after passing Naita the strait widens. Foul ground extends about one mile north-westward from Ras Masheirib (*Lat. 24° 18' N., Long. 51° 44' E.*) and about $1\frac{1}{2}$ miles in the same direction from Naita; a detached patch lies about $3\frac{1}{2}$ miles 20 north-westward of the islet.

The tidal streams in the strait are strong and set north-westward and south-eastward, but the times of their turning are not known.

Coast.—Immediately westward of Ras Masheirib is the entrance to Dōhat an Nakhala; between the reefs extending from either side 25 of this inlet the fairway, with depths of from 2 to 5 fathoms ($3^{\text{m}} 7$ to $9^{\text{m}} 1$), is about half a mile wide, but two shoal patches in its entrance render it unsuitable for shipping.

Immediately westward of this inlet is Dōhat al Kawaisāt, the entrance to which is reported to be only 40 yards ($36^{\text{m}} 6$) wide between 30 the reefs on either side, with a depth of 3 fathoms ($5^{\text{m}} 5$). The narrowest part of the entrance is between the western shore and Al Fazāya; the latter is an islet bordered by cliffs, and at its northern end there is a plateau about 50 feet ($15^{\text{m}} 2$) high; it is light in colour as is the coast in the vicinity, and is connected by a shoal to the point separating the 35 two inlets.

Ras al Hazra, about 10 miles west-north-westward of Ras Masheirib, is very low, rocky, and shelving. Several rocky islets lie on the reef which extends about half a mile offshore between the entrance of Dōhat al Kawaisāt and Ras al Hazra. A shoal was reported, in 1935, 40 to lie about $3\frac{1}{2}$ miles south-eastward of Ras al Hazra and 2 miles offshore.

Khōr adh Dhuwaihin is situated at the head of the bay which is entered between Ras al Hazra and Ras Bu Kamheiz, $12\frac{1}{2}$ miles north-north-westward. No information subsequent to that obtained during 45 the survey of 1823 is available concerning the bay, the shores of which consist, except in the vicinity of Khōr adh Dhuwaihin, of low white hills; the bay is encumbered with shoal patches and the bottom is mud.

Ras Bu Kamheiz is the eastern low rocky point of the promontory 50 forming the south-eastern side of Khōr al 'Odaid. Fasht Umm Janna is a reef which lies with its outer edge about $2\frac{1}{2}$ miles eastward and northward of Ras Bu Kamheiz; a narrow channel leads north-westward close round the point between it and the reef.

Off-lying islets and dangers.—Fareijat are two islets, lying

Chart 3707.

northward and southward of one another about 2 miles apart, the southern being about 6 miles eastward of Ras al Hazra (*Lat. 24° 23' N., Long. 51° 35' E.*) ; they are about 20 feet (6^m1) high, table-topped, and light in colour. They lie at the south-western extremity of the great chain of reefs which extends northward and north-westward from Jazair al Yāsāt and appear to be connected by a shoal.

Jazair Ghāra is a group of flat-topped rocky islets, about 20 feet (6^m1) high, lying within about 5 miles north-westward of Ras al Hazra. Several shoal patches lie north-eastward of the group ; a 3-fathom (5^m5) patch lies about 3½ miles northward of the largest islet of the group, and a shoal, reported in 1935, lies about the same distance farther northward. There is an extensive shoal, with depths of from 2 to 3 fathoms (3^m7 to 5^m5), lying within 3 miles north-westward of the group. Vessels should pass eastward of these shoals.

A detached shoal, with a depth of 2 fathoms (3^m7), lies about 2½ miles north-north-eastward of Ras al Hazra, and close northward of this shoal is an extensive shoal, with depths of from one to 3 fathoms (1^m8 to 5^m5). Vessels should pass westward of these shoals.

Caution is necessary when passing between the other shoals mentioned above and a good lookout is essential, for shoals may exist in the channel, in which the least depth appears to be 5 fathoms (9^m1).

Miyamāt entin, situated between 4½ and 6½ miles northward of the northern Fareijat, are three very low islands lying north and south on the extensive reef which extends northward from Fareijat. The area for over 15 miles eastward of Miyamāt entin, is reported to be encumbered with shoals with no passage between them, but it has not been examined.

Jazirat Kafāi, about 11 miles eastward of Ras Bu Kamheiz, is a low islet on which are some tufts of grass. A shoal extends about 2½ miles southward from the island, and another, which has not been examined and may be connected to the island, lies about 3 miles north-north-westward of it. There are several 5-fathom (9^m1) patches, and one 4-fathom (7^m3) patch, westward of these shoals.

Machāsib, about 7 miles north-eastward of Jazirat Kafāi, is a flat rocky islet, about 7 feet (2^m1) high, fringed by a reef extending about 1½ miles from it. A channel about one mile wide, in which there are depths of from 4 to 5 fathoms (7^m3 to 9^m1), separates the fringing reef from an extensive shoal south-eastward of it, the limits of which have not been determined.

Khōr al 'Odāid.—Dangers.—This inlet trends in a south-westerly direction along the north-western side of the promontory of which Ras Bu Kamheiz is the eastern extremity. The south-eastern shore of the inlet consists of rocky hills, but on the north-western side are sand hills named Niqa al Mahākaf, from 50 to 80 feet (15^m2 to 24^m4) high, round in shape, white, and barren. The khōr is frequented in winter by fishermen who remain some months ; very fine mullet are to be caught.

Jabal al 'Odāid is a ridge of hills on the eastern side of the inlet, the north-eastern end of which rises immediately within the low cliffs of the southern entrance point of the khōr (*Lat. 24° 37' N., Long. 51° 27' E.*) to an elevation of 190 feet (57^m9) ; it is light in colour, and has a table top, the edge of which is indented ; about 1½ miles farther south-westward, the ridge is about 300 feet (91^m4) high.

Chart 3707.

On the southern side of the entrance of the khōr, between its outer entrance point and a low rocky point $2\frac{1}{2}$ miles farther westward, there is a sandy beach.

6 A reef, on which are three rocks, extends about one mile eastward and half a mile northward from the southern entrance point of the khōr. Another reef, on the edge of which there are also three rocks, extends about half a mile northward from the inner point.

A sandy shoal extends about 2 miles along the northern shore of the entrance; there is deep water between its outer part and the shore, but there is no passage through into the khōr.

The narrow channel into the khōr, in which there is a depth of one fathom (1^m8), lies between the sandy shoal and the reefs extending from the southern shore. Farther in, the channel is contracted by **15** banks and rocky islets and has depths of from 2 to 4 fathoms (3^m7 to 7^m3). The head of the inlet is a lagoon which is shallow at its entrance and at its southern end, but in its northern part the chart shows a depth of 5 fathoms (9^m1). The water in the lagoon and in the inlet is of a blue colour and very clear.

20 **Anchorage.—Directions.**—Anchorage may be obtained off the northern outer entrance point of Khōr al 'Odaid about 2 cables offshore, in depths of from 6 to 10 fathoms (11^m0 to 18^m3), sand and shells, with the north-eastern summit of Jabal al 'Odaid bearing 170° ; it is just inside a slightly projecting sandy point, off which there is no reef, **25** and northward of the sandy shoal in the entrance of the khōr.

It is difficult to estimate the distance from the white sand hills on the north-eastern side of the khōr, which appear farther off than they are in reality.

The anchorage is sheltered from the shamāl and, owing to the extensive reefs seaward of it, the nashi does not raise very much sea.

Vessels approaching the anchorage should keep rather towards the shore northward of it, to avoid the outer end of the sandy shoal in the entrance of the khōr. Fasht Umm Janna shows up well and is steep-to.

Coast.—Off-lying dangers.—Jabal an Niqyān (Naqiyān) is a **35** range of high white sand hills bordering the coast for 18 miles northward of the northern entrance point of Khōr al 'Odaid. About 22 miles north-north-eastward of this point is Ras al 'Arq (Allach), from which Fasht al Arrif extends about 7 miles south-eastward. Between this reef and the entrance to Khōr al 'Odaid, there are many **40** dangers in the offing, but near the coast there is more open water.

A shoal patch lies about 5 miles north-north-eastward of the north-eastern summit of Jabal al 'Odaid and about one mile offshore, and a 3-fathom (5^m5) patch lies about 3 miles east-north-eastward of the shoal. Las hāt is a group of three rocky flat-topped islets and several **45** detached rocks lying about 12 miles north-eastward of the north-eastern summit of Jabal al 'Odaid (*Lat. $24^\circ 37' N.$, Long. $51^\circ 27' E.$*); the islets are bordered by light-coloured cliffs. A shoal, with a depth of 3 fathoms (5^m5) at its northern edge, lies about three-quarters of a mile south-eastward of the southern islet of the group; a shoal, **50** with a depth of less than 6 feet (1^m8), lies about $2\frac{1}{2}$ miles southward of the same islet, with another shoal patch about a mile farther southward. A shoal was reported, in 1935, to lie about 3 miles east-south-eastward of the same group.

A bank of white sand which barely covers, and from which other

Chart 3707.

banks extend about $2\frac{1}{2}$ miles north-westward, lies about 3 miles north-eastward of Las hāt group.

A rock, with a depth of less than 6 feet (1^m8), with a shoal with a depth of 3 fathoms (5^m5), extending about one mile eastward from it, lies about 10 miles south-south-westward of Ras al 'Arq and about one mile offshore. 5

There are doubtless other shoals in this vicinity, and a vessel in these parts should not navigate with the sun ahead.

Halat Dalma is a small sandbank, which dries, about $11\frac{1}{2}$ miles 10 north-eastward of Machāsib. It is situated on, and about 2 miles from, the western side of an extensive reef, the limits of which have not been determined, its south-eastern side being almost unexplored. There is no safe channel over or near this reef.

Fasht al 'Odaid, the western edge of which lies about 8 miles east- 15 north-eastward of Las hāt, is partly dry; there are overfalls in the channel between it and Machāsib, which is about 3 miles wide.

Fasht al Arrif (page 182) shows up well, but the coast from this vicinity is rarely visible; the apparent end of the reef should be given a berth of about one mile, for a depth of 4 fathoms (7^m3) was obtained 20 in 1911 about 6 cables from its extremity. The tidal streams set strongly over the reef. It was reported in 1934 that there was a beacon, consisting of a pole with a topmark, situated about half a mile north-westward of the apparent end of Fasht al Arrif.

A rock, which dries about 6 feet (1^m8), lies near the apparent end 25 of the reef and is conspicuous at low water.

The channel between Fasht al Arrif and Fasht al 'Odaid, is about $3\frac{1}{2}$ miles wide and is the best by which to approach Khōr al 'Odaid.

Jazirat Bishairiya or Mishiryāt is a low islet on Fasht al Arrif about 5 miles west-north-westward of its outer extremity. A channel, about 30 $1\frac{1}{2}$ miles wide, leads between the islet and the coast at the northern end of the Niqyān range into an extensive backwater which has not been examined. Ras al 'Arq is the northern entrance-point of the backwater.

H.M.S. *Shoreham* reported, in 1934, that, when passing between 35 Fasht al Arrif and Fasht al 'Odaid, Jazirat Mishiryat was not sighted, in good visibility.

Between Ras al 'Arq and Jabal al Waqra (Wakrah), a brown level-topped, rocky hill, 85 feet (25^m9) high, 10 miles northward, the coast consists of a low, sandy or stony desert, fringed by a coastal reef, which 40 extends from $1\frac{1}{2}$ to 2 miles offshore with depths of less than 3 fathoms (5^m5). Umm al Hūl is a low point about $6\frac{1}{2}$ miles northward of Ras al 'Arq (*Lat. 24° 59' N., Long. 51° 36' E.*). The width of the channel between the coast in the vicinity of Umm al Hūl and the off-lying reefs has not been determined, but it may be as much as 6 or 7 miles, with 45 fairly regular depths. Several ridges of coral and rock were reported, in 1911, by H.M.S. *Philomel* to lie from 4 to 6 miles eastward of Al Waqra (Wakrah), which is situated about $1\frac{1}{2}$ miles northward of Jabal al Waqra; they run north and south and are about 40 yards (36^m6) wide, with depths of 5 fathoms (9^m1) or less, with from 14 to 17 fathoms 50 (25^m6 to 31^m1) between them; there may be other shoals, not yet discovered, in the channel.

Rak Kāreinein, an extensive off-lying group of shoals, extends about 23 miles northward from a position close northward of Fasht al 'Odaid;

Chart 3707.

on it are a number of patches which dry with greater depths between them, but there is no known channel through them.

There is a narrow channel, in which there are depths of from 7 to 9 fathoms ($12^{\text{m}}8$ to $16^{\text{m}}5$), which leads between Fasht al 'Odaid and Rak Kareinein, and about 2 miles northward of the eastern entrance of this channel, there is a blind channel which leads about 2 miles westward into the reefs and then ends abruptly. Halat Bul Khaifān is a small shoal, which is reported to dry, on the north-eastern side of

10 Rak Kareinein.

Caution is necessary in the vicinity of Rak Kareinein, as it has not been surveyed, and may extend farther northward than charted; it is possible, also, that outlying patches may exist. It is recommended that, when navigating in these waters, a boat should sound ahead of

15 the ship, as the visibility of the shoals, or the discolouration of the water over them, cannot be entirely relied upon.

The tidal streams, through and over the reefs southward of the parallel of $25^{\circ} 15' N.$, set westward and eastward, but the times of their turning are not known.

20 Al Waqra.—**Shoal.**—**Anchorage.**—Al Waqra is a large town, divided into two parts by an inlet forming a boat harbour, situated on the shore of a bay which recedes about three-quarters of a mile from the general line of the coast. A fort, with two towers, the larger of which is high and square, stands about three-quarters of a mile inland

25 of the southern part of the town; in the northern part of the town is a large fort having three towers. A large and conspicuous white building stands close to the foreshore in the centre of the town.

A rock, over which there is a depth of less than 6 feet ($1^{\text{m}}8$), lies on the coastal bank, about 2 miles east-south-eastward of Al Waqra,

30 and a danger is shown on the chart about 2 miles farther in the same direction; a $1\frac{1}{2}$ -fathom ($3^{\text{m}}2$) patch lies about 3 miles east-north-eastward of the town. When this locality was visited by H.M.S. *Sphinx*, in 1903, the depths in the vicinity of Al Waqra were considered to

35 be generally somewhat shoaler than those shown on chart 3707. This was confirmed, in 1937, by H.M.S. *Shoreham*.

Anchorage may be obtained by a small vessel, in a depth of $2\frac{1}{2}$ fathoms ($5^{\text{m}}0$), sand and clay, with the highest tower in the northern fort (*Lat. $25^{\circ} 11' N.$, Long. $51^{\circ} 37' E.$*) bearing 299° , and the high tower of the southern fort, 232° . Larger vessels may anchor eastward of the town, in a depth of 7 fathoms ($12^{\text{m}}8$), about 3 miles offshore. In 1931, H.M.S. *Hastings* anchored with the conspicuous white building bearing about 276° and Ras Abu al Mishūt (page 185), 348° . A depth of about $2\frac{1}{2}$ fathoms ($4^{\text{m}}6$) was found about one cable southward of this position, and it is considered that there would be a better anchorage a short

45 distance north-eastward. A large purple patch was observed north-westward of the anchorage.

Landing is protected from northward and eastward by a high sand bank. There is a coral reef off the town which boats should avoid, though they may cross it at high water.

50 **Approaches to Dōha.**—**Shoals.**—**Tidal streams.**—Northward of Jabal al Waqra the coast generally, except near Dōha, is low. In the vicinity of Dōha, about 9 miles north-north-westward of Jabal al

Waqrā, there is some slightly higher rocky ground.

The approaches to Dōha, northward of the parallel of that place,

Chart 3707.

are clear of off-lying dangers ; but reefs continue to fringe the coast and extend in places as much as 10 miles offshore, the bottom becoming visible before the land is sighted.

The tidal streams set southward and northward along the coast ; but the times of their turning are not known ; they attain a rate of about one knot.

Charts 2837b, plan of Doha harbour, 3707.

Ras Abu al Mishüt (Abul Muşhüt), about 6 miles northward of Al Waqra, is low and rocky, but shows up well against the sandy coast in 10 its vicinity. A reef extends about half a mile eastward and 2 miles northward from the point.

Jazirat 'Alya (Aliyah), about 8 miles north-north-westward of Ras Abu al Mishüt, is brown in colour, though in some lights it appears white ; at its south-eastern end there is a small peak about 30 feet 15 (9^m1) high. There is a boat channel westward of the islet, but it can only be used at high water.

A bank, with depths of less than 3 fathoms (5^m5), extends a considerable distance offshore between Ras Abu al Mishüt and Jazirat 'Alya ; there is a depth of 9 feet (2^m7) on this bank about 4 miles north-eastward of Ras Abu al Mishüt, and a depth of 10 feet (3^m0) about 6 miles east-south-eastward of Jazirat 'Alya. These shoals obstruct the approach to Döha harbour, and extend southward for some distance southward of the 9-foot (2^m7) patch. In 1921, the depths in the approach to the harbour were reported to be less than charted, but 25 in 1931, H.M.S. *Folkestone* obtained soundings which agreed with those on the chart.

A detached shoal, with a depth of 21 feet (6^m4), lies about 9 miles eastward of Jazirat 'Alya, but its position is approximate. In 1933, depths of 43 feet and 45 feet (13^m4 and 13^m7) were obtained by H.M.S. 30 *Fowey* about 10¹₂ miles east-north-eastward, and 16¹₂ miles north-eastward, respectively, of Ras Abu al Mishüt (*Lat.* 25° 17' N., *Long.* 51° 37' E.) ; the latter depth was marked by overfalls.

Chart 2837b, plan of Doha harbour.

In addition to the fort at Döha (page 187) there is a white fort about 35 2¹₂ miles north-north-westward of it, with two round and three square towers, but in 1933, it was reported to be in ruins and was a poor mark. A small buff-coloured fort, with two square towers, stands about one mile south-westward of the white fort ; it may sometimes be seen before other objects in the harbour and may be used as a mark by 40 which to enter, at other times it is not readily identified. These towers may, owing to refraction, be visible at a distance of 12 or 14 miles. Between the buff fort and the white fort there is a large dark clump of trees on the flat-topped stony hills, which is a useful mark as there are no other trees on the western side of the harbour. 45

Döha harbour.—Beacon.—Döha harbour is entered between the reefs extending northward from Ras Abu al Mishüt and south-eastward from Jazirat as Säfiya, about 3¹₂ miles north-north-westward.

The land on the southern and western sides of the harbour consists of flat-topped stony hills from 40 to 50 feet (12^m2 to 15^m2) high, 50 and, with the exception of a little cultivated ground, about 1¹₂ miles south-eastward of the town, the whole country is desert.

Jazirat as Säfiya is low and sandy, and from its eastern and western ends, respectively, sand spits extend south-eastward and south-west-

Chart 2837b, plan of Doha harbour.

ward; between the extremity of the latter sand spit and an extensive reef which fills the western side of the bay and almost dries, is a narrow channel leading into a basin, westward of the islet, in which there are 6 depths of from 1½ to 3½ fathoms (2m7 to 6m4).

Ras Abu Abûd (Bu Abút), about 2½ miles west-north-westward of Ras Abu al Mishút, is low, and the intervening coast is fringed by a shallow rocky reef which extends over 1½ miles north-eastward. In 1931, it was reported that the point extends farther northward than 10 charted.

A circular masonry beacon, about 6 feet (1m8) in height, stands near the northern extremity of the reef, on the southern side of the entrance of Dôha harbour; it is not easily identified, and, at a distance, it resembles a rock.

15 It was reported, in 1932, that shoals extended northward of the beacon, and, in 1935 that general shoaling in the approach had taken place.

In 1936, a shoal, with a depth of 1½ fathoms (2m7) over it, was reported about a mile east-north-eastward of the beacon on the southern 20 side of the entrance.

A reef, over which there are depths of from 2 to 6 feet (0m6 to 1m8), rock and sand, extends about one mile southward and eastward from the eastern end of Jazirat as Sâfiya.

In 1931, the least depth on the track recommended was 2½ fathoms 25 (4m1). Vessels with a draught of 10 feet (3m0) can enter at low water.

Ras an Nisa'a (Nessa), about 1½ miles westward of Ras Abu Abûd, is a low projecting rocky point on which are the ruins of a fort, but they are not easily identified. A spit, the extremity of which nearly dries, extends about 3 cables northward from the point. In the small 30 bay westward of the point are several shoal patches which show up plainly.

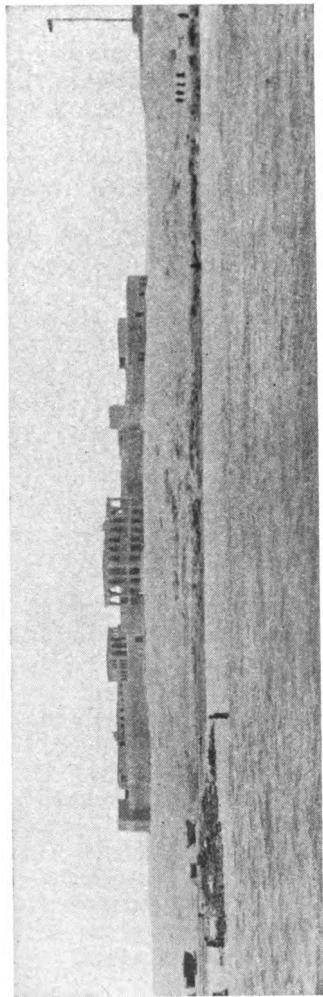
Charts 2837b, plan of Doha harbour, 3707.

Anchorage.—Directions.—Anchorage may be obtained, in depths of from 2½ to 3 fathoms (4m6 to 5m5), with the low tower of Al Bid' 35 fort (page 188) bearing about 245°, about half a mile offshore; here a vessel will be outside the native vessels and clear of the foul ground on the western side of the bay.

In 1931, H.M.S. *Hastings* encountered fishing nets stretched across the harbour in a north-north-westerly direction from Ras an Nisa'a 40 (Lat. 25° 17' N., Long. 51° 33' E.), and anchored in a position about 7 cables 355° from the flagstaff of the Shaikh's house south-eastward of that point. On a subsequent occasion she anchored about 9½ cables, 036°, from the Shaikh's house.

Landing, in shallow draught boats only, can be effected at the 45 Custom house, about three-quarters of a mile westward of Ras an Nisa'a.

As the coast northward of Dôha cannot be sighted by a vessel approaching from northward, such vessel should steer southward, parallel with it, keeping in depths of not less than 5 fathoms (9m1), 50 until east-north-eastward of Jazirat 'Alya, when she should steer for that islet, which is a useful mark, taking care to avoid the 21-foot (6m4) patch about 8½ miles eastward of it. Having sighted the islet from a position about 6 miles eastward of it, she may steer to pass eastward of the 10-foot (3m0) patch about 6 miles south-eastward of



Dōha fort from north-eastward, distant about 4 cables.

(Original dated 1933.)

Charts 2837b, plan of Doha harbour, 3707.

the islet. When Döha fort (see below) bears 247° she should steer for it on that bearing, which will lead between the 10-foot ($3^{m}0$) patch and the 9-foot ($2^{m}7$) patch about $3\frac{1}{4}$ miles farther southward. The greatest caution is, however, necessary when approaching the ⁵ reefs.

A vessel approaching Döha from north-eastward or eastward should first sight Jazirat Halil (page 188) and bring it to bear 065° , when she should steer towards Döha, keeping the island astern on that bearing, and when not less than 10 miles from the fort she should bring it to ¹⁰ bear 247° and approach the harbour on that bearing as directed above. Care should be taken to avoid the overfalls over the $7\frac{1}{2}$ -fathom ($13^{m}7$) shoal situated about $16\frac{1}{2}$ miles north-eastward of Ras Abu al Mishüt.

Should the vessel get too far southward and Jabal al Waqra be sighted, extreme caution is necessary as she may be in dangerous ¹⁵ proximity to Rak Kareinein.

The reefs at the entrance of Döha harbour are best seen from seaward early in the forenoon; the best time for leaving is late in the afternoon; at other times they are very difficult to make out. They are more clearly visible at low water, when a small vessel can enter ²⁰ guided by the eye and by sounding. A vessel of moderate size should await the rise of the tide, and, while doing so, may anchor about 6 miles eastward of Jazirat 'Alya.

Approaching the entrance in the forenoon, with Döha fort bearing 247° , the channel will be plainly seen from aloft; the reef on its north- ²⁵ ern side will then be of a dark purple colour, while that on its southern side will be of light sand colour. The southern reef extends about $1\frac{1}{2}$ cables northward of the beacon; but the greater depths are stated to be on that side of the channel.

In the vicinity of the beacon, while the tidal stream was setting ³⁰ northward, a sudden southerly set has been experienced.

Having entered the harbour, the vessel should steer to pass about $1\frac{1}{2}$ cables northward of the spit extending from Ras an Nisa'a and should then steer for the anchorage about half a mile north-westward of that point. ³⁵

Chart 2837b, plan of Doha harbour.

Döha town.—This town, situated on the southern side of the harbour, is partly walled, and in it there are several towers. The Shaikh's house, about a quarter of a mile south-eastward of Ras an Nisa'a (*Lat. $25^{\circ} 17' N.$, Long. $51^{\circ} 33' E.$*), is not easily identified; it has ⁴⁰ many columns and an open balustrade round the roof; on it is a small flagstaff which does not always show up well as it is erected on the lower portion of the building, the higher portion being behind it.

Between the Shaikh's house and Ras an Nisa'a, a very conspicuous minaret stands close to the shore in front of a large building with ⁴⁵ many colonnades. This minaret looks like a lighthouse and is a useful mark by which to identify Ras an Nisa'a, for the point does not show up at a distance.

Döha fort (see view facing this page), about one mile westward of Ras an Nisa'a, is of a light colour and very conspicuous; it is a very large courtyard-type square building with towers at its corners; these towers resemble square houses with colonnades and verandahs; in the centre of the north-western wall of the fort is a round tower. Close south-eastward of the fort is a white mosque with a conspicuous minaret at ⁵⁰

Charts 2830, 2837b, 748b.

Chart 2837b, plan of Doha harbour.

its northern end; this minaret has many colonnades and is a useful mark by which to identify the fort.

In 1931, H.M.S. *Folkestone* reported that the minaret situated about $\frac{5}{8}$ half a mile south-westward of Ras an Nisa'a, was difficult to distinguish.

Al Bid' fort, about a quarter of a mile north-westward of Döha fort, is a long, low, inconspicuous fort with a low tower at its south-eastern corner; the fort merges into the ruins north-north-westward of it.

10 On the high ground behind these two forts stands a small fort in front of which is a tall black flagstaff with stays, which is conspicuous.

Most of the inhabitants of Döha are employed in connection with the pearl fishery.

Chart 3707.

15 **Coast.—Dangers.**—Northward of Döha the land is chiefly a stony desert with a few hillocks; farther northward it becomes very low. The bottom close to the coast is of white sand or rock and usually shows up well in the clear water. Ras al Qutaifān, about $10\frac{1}{4}$ miles northward of Al Bid' fort, is probably about 50 feet ($15^m 2$) high, that **20** is, slightly higher than the adjacent coast. About 10 miles farther northward is Ras an Nauf (Nof), a low rocky point. Döhat Lüsail is a slight indentation in the coast about 6 miles north-north-westward of Ras al Qutaifān; it is shallow, but is frequented by pearl boats, which run in over the shoal which extends from its shore, for shelter **25** from the shamāl.

The coastal bank, over which there are depths of less than 3 fathoms ($5^m 6$) and on which are a number of drying patches, extends from 4 to 11 miles offshore between Ras al Qutaifān and Ras an Nauf (Nof). Ardh an Nauf (Nof) is a reef which nearly dries, lying on the coastal **30** bank about $3\frac{1}{2}$ miles eastward of Ras an Nauf. Ras al Matbakh (*Lat.* $25^{\circ} 40' N.$, *Long.* $51^{\circ} 34' E.$) lies about 3 miles north-north-eastward of Ras an Nauf and is the north-eastern entrance point of Khör Shaqlq (Shakik); in the entrance of which there is a depth of about 6 feet ($1^m 8$); near the khör there is a village in which there are several towers. **35** Halat Gabir, a low islet on which there is a cairn, lies about three-quarters of a mile eastward of Ras al Matbakh.

Khör adh Dhakhira, entered about $3\frac{1}{2}$ miles northward of Ras al Matbakh, is small and shallow. Fasht el Yabis, with depths of less than 6 feet ($1^m 8$), lies about $2\frac{1}{2}$ miles offshore eastward of Khör adh **40** Dhakhira.

In 1910, it was reported that the depths inside the 10-fathom ($18^m 3$) line, north-eastward of the shoals mentioned above were less than those shown on the chart.

A detached $6\frac{1}{4}$ -fathom ($11^m 9$) shoal lies about 10 miles eastward of **45** Fasht el Yabis.

Chart 2830.

Ras Laffān, about 14 miles northward of Ras al Matbakh, is very low and sandy; the coastal reef does not extend much more than half a mile off it.

50 A bank, which was not examined, with a least depth of 39 feet ($11^m 9$), was reported, in 1933, to lie about 13 miles north-eastward of Ras al Matbakh.

Chart 3707.

Jazirat Halūl.—This island, situated just within the edge of the

Chart 3707.

Great Pearl bank (page 167), about 46 miles eastward of Ras al Matbakh, is hilly and rises to an elevation of 192 feet (58^m5). It is fringed by a reef, which, in places, extends about 2 cables offshore; shoals extend about 6 cables northward and north-eastward from the island. The island is barren, but is visited by the pearl boats. 5

The depths in the vicinity of the island give little warning of its proximity and there are heavy overfalls around it; between 15 and 20 miles from the island and also about one mile from it there are depths of from 10 to 14 fathoms (18^m3 to 25^m6). Small detached 10 patches, over which there are depths of 6, 6, 7 and 7½ fathoms (11^m0, 11^m0, 12^m8 and 13^m7), lie, respectively, about 14 miles west-north-westward, 26 miles east-south-eastward, 20 miles south-south-eastward, and 23 miles south-westward of the island.

Chart 2837b, plan of Jazirat Halūl anchorage.

15

Anchorage.—Anchorage may be obtained, in a depth of 7 fathoms (12^m8) about 3 cables off the south-eastern coast of Jazirat Halūl; but, during a shamāl, much swell rolls round the island, and the bottom, being patches of sand and rock, is not very good holding ground. 20

In July 1925, H.M.S. *Cyclamen* anchored, in a depth of 7 fathoms (12^m8), with the 192-foot (58^m5) summit bearing 310°, and the eastern extremity of the island, 353°; a strong shamāl was blowing at the time; the holding ground was good. Numerous dhows were sheltering under the lee of the island at the time. 25

Landing may be effected at a gap in the low cliff south-westward of a sandy beach north-westward of the anchorage; but it is only suitable for boats of shallow draught, and, as there are many rocky patches near it, it should not be attempted in heavy weather. During south-easterly winds, landing at this place would be dangerous; but 30 there is then a more sheltered place on the south-western part of the island.

Chart 2837b.

Coast.—Between Ras Laffān (*Lat.* 25° 55' *N.*, *Long.* 51° 33' *E.*) and Ras Rākān, about 24 miles north-westward, there are no off-lying 35 dangers except off the latter point.

Al Huwaila, about 6 miles west-north-westward of Ras Laffān, is a small town in which there is a square fort about 30 feet (9^m1) high. Westward of the town is a small bay in which the depths are shallow, the shore reef extending about 1½ miles off the beach. Ras al Marrūna, 40 about 4½ miles north-westward of Al Huwaila, is the north-western entrance point of this bay; it affords shelter from the shamāl to the pearl boats which anchor close inshore southward of it.

Fuwaira, about 2 miles north-westward of Ras al Marrūna, on the shore of a small inlet, is a walled village in which there are several 45 towers; immediately northward of it are some small white sand hills. Al Ghāriya, at the northern end of the sand hills about one mile northward of Fuwaira, is a deserted village in which there are the ruins of a large fort.

Ras Umm Hasā, about 6 miles north-north-westward of Ras al 50 Marrūna, rises to a rocky hillock, about 20 feet (6^m1) high. The coastal reef extends about one mile off the point, and the depths are reported to be shoal for some distance farther off. Boats obtain shelter from the shamāl close inshore southward of the point.

Chart 748b.

Chart 2837b.

Ras Rākān is the north-western extremity of a very low islet with tufts of grass on it, lying about one mile within the edge of the coastal reef; this reef fringes the northern end of Al Qatar and extends about 5 $1\frac{1}{2}$ miles offshore, from which the islet can be reached, at low water, by wading. Native boats shelter southward of the islet. A small rocky mound, which is conspicuous from seaward, lies on the mainland about $2\frac{1}{2}$ miles southward of Ras Rākān.

Ar Ruwais, about $2\frac{1}{2}$ miles southward of Ras Rākān, is a small 10 town, the northernmost on Al Qatar; when approaching from northward it becomes visible before Ras Rākān is sighted.

An 8-fathom (14 m 6) patch, with another of similar depth about 3 $\frac{1}{2}$ miles eastward of it, lies about 17 miles east-north-eastward of Ras Rākān (*Lat. 26° 11' N., Long. 51° 41' E.*), and a 9-fathom (16 m 5) patch 16 was reported, in 1933, to lie about 36 miles east-north-eastward of the same point.

Chart 748b.

CHAPTER VII

**PERSIAN GULF, SOUTH-WESTERN SIDE—WESTERN SIDE OF AL QATAR,
BAHREIN ISLAND, AND THE COASTS OF NEJD AND KUWAIT—RAS RĀKĀN
TO KHŪR 'ABDULLAH.**

Chart 2837b.

GENERAL REMARKS.—The whole coast between Ras Rākān and Jazirat Būbiyān, about 260 miles north-westward, is a low sandy or stony desert with, here and there, a few small hills. The only vegetation, except near Al Qatif (Katif), situated about 69 miles west-north-westward of Ras Rākān, and in the vicinity of one or two other towns where there are date palms, is the coarse grass growing in tufts on the sand hills, and the occasional small brushwood. As far northward as Ras al Mish'āb, 186 miles north-westward of Ras Rākān, the coast is fronted by extensive reefs; and off it lie Bahrein ¹⁰ island (*see page 195*), and many low islets. With the exception of a few towns, this coast is rarely visited by Europeans. There are large tracts without villages or any settled inhabitants, and it is probably unsafe to wander away from the towns on the mainland without an armed escort. ¹⁵

The coast southward of Ras Rākān (*Lat. 26° 11' N., Long. 51° 14' E.*) forms the eastern side of Dōhat-as-Salwa, an extensive bay, off the entrance of which is Bahrein island. Reefs extend from the eastern side of Bahrein island to within 5 miles of the west coast of Al Qatar, and southward of them the bay has not been surveyed, but in 1901 ²⁰ it was reported to be encumbered with reefs and shoals.

For tidal streams, *see page 209.*

Local weather. *See pages 32–37.*

WESTERN SIDE OF AL QATAR.—Coast.—Danger.—Between Ras Rākān and Ras 'Ashairiq, about 17 miles south-westward, ²⁵ the coast is low and of so light a colour that it is difficult to distinguish, especially when enveloped in the prevailing haze.

A reef fringes this coast to within 4 miles of Ras 'Ashairiq and extends from 2 to 3 miles offshore; it nearly all dries and is plainly visible in a good light; landing, except at high water, is very difficult. ³⁰

Ras Abu 'Amrān, about $2\frac{1}{2}$ miles south-south-westward of Ras Rākān, is low, but rises to a small rocky mound. About $1\frac{1}{4}$ miles farther in the same direction is Abu Dhalfūf (Dhuluf), a small town, with four conspicuous towers on its fort. Khōr Hassān (Hasan),

Chart 748b.

Chart 2837b.

about $7\frac{1}{2}$ miles south-westward of Ras Abu 'Amrān, is a small, conspicuous, and very compact walled town ; about half a mile northward of it there is an islet, on which there is a low round tower.

5 Ras 'Ashairiq is low and rocky, with the ruins of a lookout tower on it. A reef extends about one cable from the point, and between it and the reefs extending eastward from Bahrein island there are depths of from 2 to 3 fathoms ($3^{\text{m}}7$ to $5^{\text{m}}5$). Ras 'Ashairiq is the western entrance point of a shallow bay formed between it and the coast ; **10** on the eastern side of the bay are the ruins of the town of Zubāra ; in 1937, the old fort, though fast crumbling away, was still conspicuous. The shores of the bay and the coast immediately northward of it are sandy and dry offshore for a considerable distance.

Katat Ekhchejera is a rock, over which there is a depth of 6 feet ($1^{\text{m}}8$), lying about 2 miles north-westward of Ras 'Ashairiq ; the sea breaks over it at low water, and at high water its presence is disclosed by an oily appearance of the surface and slight discolouration.

Anchorage.—Anchorage may be obtained by vessels with local knowledge off Ras 'Ashairiq, by vessels with a draught up to 10 feet **20** ($3^{\text{m}}0$), in a depth of $2\frac{1}{2}$ fathoms ($4^{\text{m}}6$), about half a mile north-westward of the point ; vessels with a draught of 15 feet ($4^{\text{m}}6$) should anchor, in a depth of $3\frac{1}{2}$ fathoms ($5^{\text{m}}9$), about 5 miles north-north-westward of the point.

Approaching these anchorages, vessels should make Ras Rākān **25** or Ras Abu Amrān and steer south-westward along the edge of the reef, keeping a good lookout for indications of shoals.

Coast.—The ruins of Rubaija lie about 2 miles southward of Ras 'Ashairiq (*Lat. 25° 59' N., Long. 51° 00' E.*) ; thence to Dōhat al Hasain (Adhwan), entered about 20 miles farther southward, there **30** are no signs of habitation ; the greatest depth in this inlet, the inner part of which is named Dōhat Faishshākh, is 2 fathoms ($3^{\text{m}}7$), and on its shores are several forts and huts. Jazirat Hawār is the western-most and largest of a group of islands on the western side of the entrance to Dōhat al Hasain ; neither the islands nor their vicinity **35** have been surveyed. Ras Aburūk is the northern extremity and Ras as Sauwād (Sawad) the north-western extremity of a peninsula, the eastern side of which forms the western side of Dōhat al Hasain ; the north-western side of this peninsula is reported by the natives to consist of a range of moderately high stony hills.

40 Off-lying dangers.—A shoal, with a least depth of $3\frac{1}{2}$ fathoms ($6^{\text{m}}9$), lies about 13 miles north-north-westward of Ras Rākān. A vessel of shallow draught can pass between it and Fasht ad Dibal, about 8 miles south-westward, but those of deep draught should keep northward of it, in depths of not less than 6 fathoms ($11^{\text{m}}0$).

45 Charts 3790, 2837b.

Fasht ad Dibal, about 14 miles west-north-westward of Ras Rākān, dries in places, and its northern edge is fairly steep-to. On the north-eastern edge of the reef there is a beacon, consisting of a pile of stones, which, from a distance, resembles a small boat. In a good light the **50** reef can be seen at all states of the tide. A detached 2-fathom ($3^{\text{m}}7$) patch lies about 3 miles westward of its southern end, and a shoal, over which there are depths of from 6 to 18 feet ($1^{\text{m}}8$ to $5^{\text{m}}5$), extends about 10 miles south-south-westward from Fasht ad Dibal, joining the reefs extending eastward from Bahrein island. Katah ad Jaradeh,

Chart 748b.

Charts 3790, 2837b.

which dries in places, is separated from the southern end of Fasht ad Dibal by a channel, about $2\frac{1}{2}$ miles wide, with depths of from 15 to 18 feet (4^m6 to 5^m5) in the fairway. On the south-eastern side of Katah ad Jaradeh there is a narrow strip of sand, which dries 5 7 feet (2^m1), at its southern end. A white masonry beacon surmounted by a black staff, is situated on the southern extremity of the reef.

About 8 miles south-south-westward of Katah ad Jaradeh is the eastern extremity of the reefs extending about 15 miles or more east- 10 ward from Bahrein island, the whole space within that distance being apparently encumbered with shoals which have not been examined.

As the west-going tidal stream sets southward in the vicinity of Fasht ad Dibal, vessels should keep well northward of the reef.

NORTH-EASTERN AND NORTHERN APPROACHES 15 TO BAHREIN HARBOUR.—Light-vessel.—Fog signal.— Dangers.—Light.—The edge of the Great Pearl bank (page 167) extends west-north-westward from a position about 35 miles north- 20 north-eastward of Ras Rākān. Northward of Ras Rākān there are overfalls in places on the bank.

A light-vessel, painted red, with " Bahrein " in white letters on the sides, is moored about 27 miles north-north-westward of Ras Rākān. A light is exhibited, at an elevation of 45 feet (13^m7), from a black tower amidships. A fog signal is sounded from the light-vessel.

A red conical buoy, with " Watch " in white letters on its sides, is 25 moored about 3 cables westward of the light-vessel.

Chart 3788.

Rennie shoals, the outermost danger in the northern approach to Bahrein harbour, lie about 58 miles north-north-westward of Ras Rākān (*Lat. 26° 11' N., Long. 51° 14' E.*) ; they consist of two patches, 30 each with a least depth of 2 fathoms (3^m7), rock, about 3 miles apart, north and south ; there is no visible indication of their presence.

A light is exhibited, at an elevation of 30 feet (9^m1), from a black steel pile beacon, with " 1 " painted in white on its side, situated on the southern side of the southern Rennie shoal. The light was ex- 35 tinguished in 1941.

A bank, with a depth of $8\frac{1}{2}$ fathoms (15^m5), lies about $4\frac{1}{2}$ miles south-south-eastward of the southern Rennie shoal.

An obstruction was reported in 1917, to lie about 8 miles south- 40 south-eastward of the southern Rennie shoal.

Bu Athama, a detached patch with a depth of 3 fathoms (5^m5), and steep-to, lies about 16 miles south-eastward of the southern Rennie shoal ; a 6-fathom (11^m0) patch lies about $2\frac{1}{2}$ miles eastward of Bu Athama.

A 6-fathom (11^m0) patch lies about 9 miles south-south-westward of 45 Bu Athama, and between them is a coral bank with a least depth of 8 fathoms (14^m6).

Bu Amāma is an extensive bank, with a least depth of 8 fathoms (14^m6), lying about 10 miles southward of the southern Rennie shoal. Al Ashira is an extensive bank, with a least known depth of 3 fathoms 50 (5^m5), lying close westward of Bu Amāma, the shoalest part being about 14 miles south-south-westward of the southern Rennie shoal.

For shoals farther westward, see page 208.

Chart 748b.

Chart 3788.

An extensive shoal, with a least depth of 4 fathoms, lies with its shoalest part about 13 miles east-north-eastward of Fasht al Jārim.
Chart 3790.

5 Fasht al Jārim is an extensive reef, situated with Ras as Shāb, its northern extremity, about 29 miles south-south-westward of the light structure on the southern Rennie shoal. Its middle and southern parts consist of rock and sand, but on its northern end are black masses of coral ; at its southern end, which is called Jādam, is a large 10 sand bank. Kalai'a, a rock which dries 6 feet (1^m8), lies about $4\frac{1}{2}$ miles north-north-westward of the southern extremity of the reef.

Charts 3788, 3790.

Ras as Shāb is out of sight of land, and caution is therefore necessary when approaching it from northward. Adāla bank, with depths of 15 from 2 to 3 fathoms (3^m7 to 5^m5), extends about $2\frac{1}{2}$ miles north-westward from the northern end of Fasht al Jārim.

Chart 3790.

Harāka is a small bight on the eastern side of Fasht al Jārim with depths of less than 2 fathoms (3^m7), which affords shelter for small 20 craft during the shamāl. Ras al Ain is a detached reef lying between Harāka and the southern extremity of Fasht al Jārim.

Chart 3792.

A rock, with a depth of less than 6 feet (1^m8), lies about $2\frac{1}{2}$ miles east-south-eastward of Ras al Ain (*Lat. $26^{\circ} 24' N.$, Long. $50^{\circ} 32' E.$*).
25 Muharraq island.—Dangers.—Lights.—Beacons.—This island, situated north-eastward of Bahrein island, and separated from it by a narrow channel, which leads to Khōr Kaliya (page 200), is low and sandy ; on it are several conspicuous groves of date palms, about 30 65 feet (19^m8) high, which are the first objects sighted when approaching, though in very clear weather, Jabal ad Dukhkhān (Dukhan) (chart 2837b) (page 195), will be visible just before them.

Qalāli (Galali) is a village on the north-eastern extremity of the island, in which there are several small towers, the easternmost being the largest. Samāhij (Simahij), Dair and Busaitin are villages with 35 date groves, on the northern and western coasts of the island. Near the northern extremity of the island is Raiya (Riya), where there is a clump of date palms, which can be identified from north-eastward by two white buildings close westward of it.

Reefs fringe the island and extend offshore for a distance of about 40 2 miles in places. A shallow flat, over which there are depths of less than 3 fathoms (5^m5), extends about $3\frac{1}{2}$ miles north-westward, $2\frac{1}{2}$ miles northward, and 3 miles eastward from the coasts of the island. Ras Khasaifa spit is the north-western extremity of these flats. Jazirat Khasaifa, 8 feet (2^m4) high, lies on the fringing reef $3\frac{1}{2}$ cables from the 45 northern side of Muharraq island. A white pole beacon, 50 feet (15^m2) in height, surmounted by a cylinder, painted in black and white bands, stands on Jazirat Khasaifa. Fasht al Hadba is the north-western extremity of the reef extending from the north-western side of the island. Jazirat as Sāja (Saya islet), about 2 feet (0^m6) high, lies on 50 the reef about 8 cables westward of Busaitin village. A white pole beacon, 35 feet (10^m7) in height, surmounted by a cylinder, stands on Jazirat as Sāja. There are numerous fishing stakes on the reef in the vicinity of Jazirat Khasaifa and Jazirat as Sāja.

Muharraq, a large town with an entirely native population, is

Charts 2837b, 748b.

Chart 3792.

situated on the south-western extremity of the island. There is a boat pier at the town which is available at all states of the tide, but elsewhere landing is only possible when the tide is above mean sea level. There is a quarantine station in the town.

Two lights, vertically disposed, are exhibited from a conspicuous flagstaff at the inner end of the pier.

Abu Māhur (Mahir) is a square fort with one large and three small towers, conspicuous from the anchorage in Bahrein harbour, situated at the southern end of the town; it stands on a low detached bank 10 which becomes an islet at high water.

Al Hadd, a town situated on the south-eastern extremity of Muharraq island, is conspicuous from eastward. A reef, which forms the eastern side of Khōr Kaliya (page 200), extends about 3½ miles southward from the town.

About midway between the towns of Muharraq and Al Hadd is Arād peninsula, on the south-western part of which are a fort, date grove, and a large white house.

There is a landing ground for aircraft about 1½ miles north-eastward of Muharraq town.

Charts 3792, 3790.

Bahrein island.—Dangers.—The coasts of Bahrein island are low, and along its northern end is a belt of fertile land covered with date groves and lucerne; the remainder of the island is uncultivated.

From about 4 miles southward of the northern coast, a rocky table-land, from 100 to 150 feet (30^m2 to 45^m7) high, extends southward for many miles and stretches across the island almost from side to side; the tableland rises on all sides in small cliffs.

Rīfā (Ar Rīfa) ash Sharqi, a village about 7 miles southward of the north-eastern extremity of the island, stands partly on, and partly 30 at the foot of the cliffs on the north-eastern side of the tableland; at the village (*Lat.* 26° 07' *N.*, *Long.* 50° 34' *E.*) is a hill fort with several towers which attain an elevation of about 210 feet (64^m0), and from northward are visible over the tree tops from seaward, though at times, owing to the growth of the trees they are difficult to identify 35 even from aloft.

Jabal ad Dukhkhān (Dukhan) (chart 2837b), about 12 miles from the northern end of the island and about midway between its eastern and western coasts, is a small compact group of dark hills, 440 feet (134^m1) high, on the summit of which are two black towers; in clear 40 weather it is the first part of the island to be sighted when approaching it, and the rig of an oil well on the south-eastern slope of the hills is conspicuous from north-eastward. See view facing page 198.

Chart 3792, with plan of Bahrein harbour.

Ras ar Rummān, the north-eastern extremity of the island and 45 on which stands Manāma town (page 199), is situated about 1½ miles south-westward of Muharraq town. About 2½ miles south-westward of the point are the ruins of a large mosque with two minarets, each about 70 feet (21^m3) high, the upper parts of which are visible over the tree tops until near the inner harbour and are good marks though 50 not easily identified.

The Portuguese fort about 3½ miles westward of Ras ar Rummān, stands in ruins about 60 feet (18^m3) in height, in a gap in the date groves, about three-quarters of a cable from the beach and is little

Charts 2837b, 748b.

Chart 3792, with plan of Bahrein harbour.

better than a heap of stones; from seaward, it appears as a shapeless light coloured mass; in 1933, its highest part attained an elevation of about 72 feet ($21^{\text{m}}9$); it is very conspicuous in the early morning ⁵ sunshine, but is difficult to distinguish when the sun is behind it. It is known among the villages in the vicinity as Qal 'at al 'Ajāj, and in the town of Manāma as Qal 'at al Farangi. About $2\frac{1}{2}$ miles westward of the fort is the village of Sharaiba (Shereiba).

Chart 3790.

10 Budai'a is a town standing on the north-western point of Bahrein island.

Charts 3792, 3790.

The northern coast of Bahrein island is fringed with reefs which dry, extending from half a mile to $1\frac{1}{2}$ miles offshore. Liya, about **15** $1\frac{1}{2}$ miles northward of the Portuguese fort, is a rock which dries 3 feet ($0^{\text{m}}9$), lying on a spit with depths of less than 3 fathoms ($5^{\text{m}}5$), which extends nearly $2\frac{1}{2}$ miles northward from the coast. Lighthouse rock, about 2 feet ($0^{\text{m}}6$) high, lies on the edge of the reefs about one mile northward of the Portuguese fort; it is not conspicuous, being **20** almost hidden by fishing stakes.

Chart 3790.

Sala is a detached reef, which dries, about $2\frac{1}{2}$ miles north-westward of Shareiba (*Lat. $26^{\circ} 14' N.$, Long. $50^{\circ} 28' E.$*); there are several shoals in its vicinity and the depths are very irregular. About $2\frac{1}{2}$ miles **25** northward of Sala is Marwadi, a reef which dries about 6 feet ($1^{\text{m}}8$); at high water, when it is just covered, if about mid-day it is difficult to distinguish, though its presence is usually disclosed by the birds on it.

West spit is the south-eastern extremity of a shoal, over which **30** there are depths of from 10 to 18 feet ($3^{\text{m}}0$ to $5^{\text{m}}5$), which extends south-eastward, into Bahrein harbour, for about $4\frac{1}{2}$ miles from Marwadi; the shoal also extends about $1\frac{1}{2}$ miles south-westward from Marwadi.

Khōr Fasht, a coral reef on which there are two or three sand-banks which dry 3 or 4 feet ($0^{\text{m}}9$ or $1^{\text{m}}2$), lies with its south-eastern end about three-quarters of a mile northward of Marwadi and about $2\frac{1}{2}$ miles south-westward of Jādam. Its eastern edge usually shows up plainly, but it is reported that it is very difficult to distinguish the reef at high water when that occurs about mid-day.

40 A narrow channel, with a least depth of 16 feet ($4^{\text{m}}9$) in the fairway, separates Marwadi from Khōr Fasht.

Rak al Yadda is an extensive sand bank, the extent of which has not been determined, separated from the south-western side of Khōr Fasht by a channel 4 cables wide, with a least depth of 20 feet ($6^{\text{m}}1$).

*45 Charts 3792, with plan of Bahrein harbour, 3790.***BAHREIN HARBOUR AND EASTERN APPROACH.—**

Light.—**Light-buoys.**—**Dangers.**—Bahrein harbour lies northward of Bahrein island, and is entered between Ras Khasifa spit on the south, and the shoal extending south-eastward from Jādam. Although **50** Fasht al Jārim affords shelter from the shamāl it does not prevent a considerable sea getting up in the outer harbour when the wind is strong; communication, however, with the shore is seldom interrupted, and vessels ride easily at their anchor.

Charts 2837b, 748b.

Charts 3792, with plan of Bahrain harbour, 3790.

A light is exhibited, at an elevation of 20 feet ($6^{\text{m}}1$), from a black steel framework structure, with white bands, on a concrete base, situated on Ras Zurawen. See below.

North Sitra light-buoy, painted black and exhibiting a *white flashing* 5 light, is moored about 12 miles east-north-eastward of Jazirat Khasaifa.

The outer light-buoy, conical, painted in red and black bands, surmounted by a can shape, painted in black and white vertical stripes, exhibiting a *red flashing* light, is moored on the north-western side of the fairway about 6 miles north-eastward of Jazirat Khasaifa. 10

The inner light-buoy, conical, painted in red and black bands, exhibiting a *white flashing* light, is moored on the northern side of the fairway in the approach to the harbour, about 5 miles north-westward of Jazirat Khasaifa.

Fasht Rustan is a reef, westward of those extending from Muharraq 15 island, lying about $2\frac{1}{2}$ miles north-north-westward of Ras ar Rummān.

Ras Zurawen on the eastern side of the inner harbour, about $1\frac{1}{2}$ miles north-westward of Ras ar Rummān (*Lat.* $26^{\circ} 14' N.$, *Long.* $50^{\circ} 35' E.$), is the western extremity of the reefs extending north-north-westward from that point. 20

A conical light-buoy, painted red, surmounted by a black cone, and exhibiting a *white flashing* light *every six seconds*, marks the eastern extremity of West spit, about 2 miles north-north-westward of Ras Zurawen light structure.

The inner harbour is a bight in the reefs west-north-westward of 25 Manāma town affording much better shelter than the outer harbour; it is suitable for small craft and is usually full of bāgalas, but vessels with a draught of more than 13 feet ($4^{\text{m}}0$) should not enter. The reefs bordering the inner harbour are all flat and in a good light they show up well; there are numerous fish weirs on them, but with a 30 few exceptions, they are all a considerable distance inside the edge of the reef. Discoloured water often extends westward of Jazirat Khasaifa, across the harbour.

The least depth in the fairway from seaward into the outer harbour is 22 feet ($6^{\text{m}}7$), and thence into the inner harbour, 16 feet ($4^{\text{m}}9$). 35

A small red can buoy, exhibiting occasionally a *red fixed* light, is moored about half a mile north-westward of the Customs pier (page 199); boats should pass close southward of it.

Anchorages.—A vessel may obtain anchorage in the outer harbour close westward of the leading line (see below), in depths of from 24 to 40 30 feet ($7^{\text{m}}3$ to $9^{\text{m}}1$), with the northern extremity of Muharraq island bearing between 085° and 090° .

A vessel with a draught up to 15 feet ($4^{\text{m}}6$) may anchor close eastward of the leading line, with Ras Zurawen light structure in line with the conspicuous flagstaff on the pier at Muharraq, bearing 095° , 45 over a bottom of sand and mud. If Jabal ad Dukhhān cannot be seen she should anchor when the light standard on the Customs pier bears 132° . Vessels with a draught of less than 13 feet ($4^{\text{m}}0$) may anchor in the inner anchorage with Ras Zurawen light structure bearing 000° , distant half a mile, over a bottom of sand. 50

Good anchorage, completely sheltered from the shamāl, may be obtained eastward of Jādam.

Charts 3792, 3790, 2837b.

Directions.—A vessel approaching Bahrain harbour should keep

Charts 2837b, 748b.

Charts 3792, 3790, 2837b.

a good lookout from aloft for shoals as the locality in the offing has not been thoroughly surveyed. The 10-fathom ($18^{\text{m}}3$) line about 25 miles north-eastward of Jazirat Khasaifa in the vicinity of Bahrein 5 light-vessel, is a good guide. During the summer months the sand-haze renders it, at times, difficult to pick up the light-vessel, but at other times it is often sighted before it is expected owing to mirage. During spring and autumn early morning fog or thick mist may render it advisable to make the light-vessel at night rather than in the early 10 morning. During the pearl-fishing season, a great number of dhows anchor on the banks in the vicinity of the light-vessel, rendering caution necessary at night ; these vessels, however, will indicate the direction and strength of the tidal stream.

Should a vessel approaching the harbour be set southward of the 15 fairway, the clumps of date palms on Muharraq island, Qalāli village, the town of Al Hadd, Jabal ad Dukhhān and Rifā' ash Sharqi village, should be seen in time to ascertain the position in safety. If these objects cannot be distinguished, the 6-fathom ($11^{\text{m}}0$) line gives ample warning of shoal depths, with the exception of two positions, eastward 20 of Al Hadd (*Lat. 26° 14' N., Long. 50° 39' E.*) and eastward of Kassār Diwan (page 200), in which positions there are depths of 18 feet ($5^{\text{m}}5$) or less, only 3 cables and half a cable, respectively, inside the 6-fathom ($11^{\text{m}}0$) line.

The edge of Fasht al Jārim is usually indicated by the pale green 25 colour of the sea, especially in the early morning. The tidal streams set eastward and westward in the approach to Bahrein harbour.

In clear weather, as Bahrein island is approached, Jabal ad Dukhhān may be sighted at a distance of about 25 miles ; at about the same time the wireless mast at Manāma and those about $1\frac{1}{4}$ miles south-westward will come into sight, and subsequently the date palms at Raiya and the northernmost clumps of trees on Muharraq island will appear.

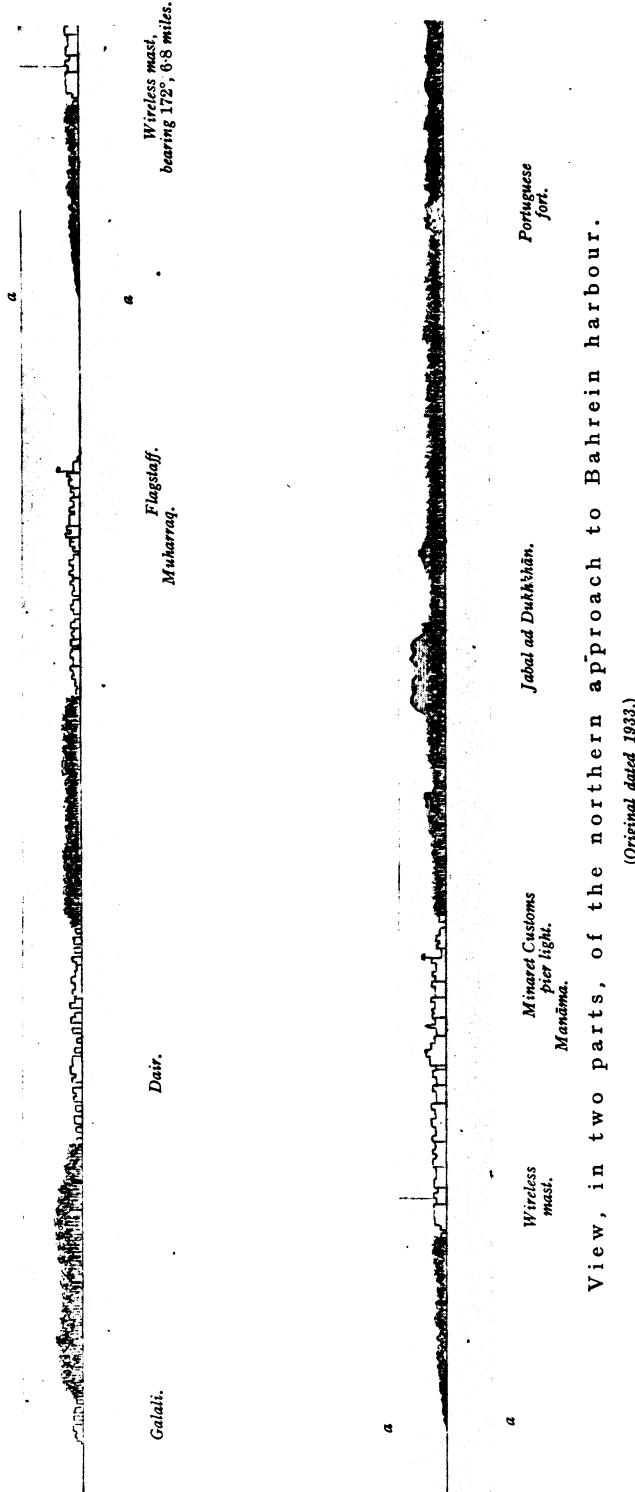
On nearer approach from north-eastward, should the light-vessel be adrift or out of position, Jabal ad Dukhhān, bearing about 208° , 30 or Raiya clump bearing about 232° , will lead in depths of 5 fathoms ($9^{\text{m}}1$), until Qalāli tower and the remaining clumps of date palms on Muharraq island can be seen, and the position of the vessel fixed approximately.

Having passed the light-vessel, a least depth of 22 feet ($6^{\text{m}}7$) may 40 be assured by steering for the outer light-buoy and thence steering to pass close southward of the inner light-buoy. When the western of the two minarets, situated about $2\frac{1}{4}$ miles south-westward of Ras ar Rummān, is in line with the western shoulder of Jabal ad Dukhhān, bearing 182° , the leading line may be followed and anchorage obtained 45 as previously directed. See view facing this page.

If these leading marks cannot be distinguished, the vessel should steer for the old Portuguese fort, bearing about 202° , which will lead about 4 cables eastward of West spit. The minarets, which are difficult to distinguish, appear as two pointed towers showing just above 50 the tops of the trees ; they become obscured by the trees as the inner harbour is approached.

As the buoys have been reported to be unreliable, the ship should be fixed frequently, until the leading line mentioned above can be seen, great care being taken to avoid the outlying patches of 18 and 17

Charts 2837b, 748b.



View, in two parts, of the northern approach to Bahrain harbour.

(Original dated 1933)

Charts 3792, 3790, 2837b.

feet (5^m5 and 5^m2), situated about 6 miles north-eastward and $3\frac{1}{2}$ miles north-north-westward, respectively, of Jazirat Khasaifa.

The tidal stream, which sets north-eastward across the entrance of the inner harbour, is appreciable, and caution is therefore necessary ⁵ on that account also. The closer in that a vessel is able to anchor the less is the sea that will be felt during a shamāl.

For tidal streams in the entrance to the outer harbour, see page 210.
Chart 3792, with plan of Bahrain harbour.

Manāma.—**Lights.**—**Beacon.**—This, the principal town and ¹⁰ port of Bahrain island, is situated on Ras ar Rummān. The British Political Agency, with its flagstaff, stands about $1\frac{1}{2}$ cables west-south-westward of the point. The W/T station, with its mast, which latter is conspicuous, and 211 feet (64^m3) high, is situated about half a mile south-south-eastward of the point. A light for the ¹⁵ use of aircraft is occasionally exhibited from the top of this mast.

A stone pier extends north-north-westward from a position close eastward of the British Political Agency. A black and white pole beacon stands on the head of this pier. The steps of the pier dry ²⁰ 2 feet (0^m6). Boats' crews should be warned against wading with bare feet, as the coral is sharp, and cuts caused by it are liable to be poisoned.

The Customs pier is situated about 6 cables west-south-westward of Ras ar Rummān (*Lat. $26^{\circ} 14' N.$, Long. $50^{\circ} 36' E.$*). At very low tides there is a depth of only 9 inches (0^m2) alongside it. ²⁵

A light is occasionally exhibited, at an elevation of 83 feet (25^m3), from a black iron framework beacon at the head of the Customs pier.

Two minarets, situated about 2 cables west-south-westward and 5 cables south-south-westward, respectively, of the British Political ³⁰ Agency, and four masts of the W/TDF station, about 8 cables south-westward of the latter minaret, are conspicuous. See view facing page 198.

The Shaikh's palace, which has a dome, is situated about one mile southward of Ras ar Rummān. For light see page 202. ³⁵

Pilots.—Native pilots usually proceed to a vessel when she is observed approaching the harbour.

Port facilities.—Fresh meat and bread are plentiful, but vegetables are scarce. Water may be obtained from tank boats.

There is a hospital attached to the British Political Agency, and ⁴⁰ there are two American hospitals.

Trade.—The principal exports are oil, pearls, wood fuel, rope, hides and skins, dried fish and dates; the chief imports are cotton goods, tinned foods, hardware, cutlery and cement.

Communications.—There is regular steamer communication with ⁴⁵ the principal ports in the Persian gulf.

There is communication by air with Great Britain and Australia.

W/T stations.—There is a W/T station and also a W/TDF station at Manāma. See page 17.

Climate and health.—The climate in Bahrain harbour is un- ⁵⁰ pleasant from April until October, being very hot with a high relative humidity; it is stated, however, to be better than any of the other ports on the Arabian coast of the gulf. Very pleasant weather is experienced from November to March.

Chart 3792, with plan of Bahrein harbour.

The bārih, or 40-days shamāl, often makes the climate in June and July comfortably cool and pleasant.

Manāma, having a large population and a great dhow traffic, is naturally more liable to epidemics than the smaller ports ; since 1920, however, there have been no more epidemics in Bahrein than in any other of the larger Gulf ports. It is fairly free from insect pests.

The endemic diseases are : smallpox, the enteric group of fevers ; dysentery, both amoebic and bacillary ; malaria ; and all kinds of venereal disease. Europeans, however, are seldom attacked if they observe the usual precautions.

The epidemic diseases are plague and cholera. The former is always imported from India, either directly or through intermediate ports ; since 1920, epidemics of this disease have arisen at intervals of 5 years, but under steadily improving quarantine supervision they should tend to become still less frequent. The latter, cholera, is imported, usually, from Iraq ; Bahrein is, however, less frequently attacked than any other of the Gulf ports, and this is probably due to the fact that the water supply is less open to contamination. The Agency surgeon acts as Quarantine Officer for the Government of Bahrein.

*Chart 3792, with plan of Khor Kaliya.***KHÖR KALIYA AND APPROACHES.—Dangers.—Beacons.**

—Lights.—**Buoyage.**—This extensive inlet lies eastward of the northern end of Bahrein island, and southward of Muharraq island ; it is enclosed on its eastern and southern sides by reefs extending, respectively, southward and eastward from Muharraq and Bahrein islands. The only entrance available to shipping is at its south-eastern corner ; but there is a boat passage, with a depth of one foot (0^m3), the entrance to which lies between Fasht Rustan and Jazirat as Sāja, (*Lat. 26° 16' N., Long. 50° 36' E.*), leading into its north-western corner.

A causeway crosses the north-western end of the inlet between Manāma and Muharraq, but it does not obstruct the boat passage.

The middle of the inlet is occupied by an extensive shoal, over which there is a least depth of 7 feet (2^m1), sand, but there is a considerable area around the shoal which affords good anchorage, sheltered from the shamāl.

40 Kassār Diwan, on which there is a small cairn surmounted by a staff, is a rock, about one foot (0^m3) high, lies on the southern extremity of the reef which extends about 3½ miles southward from the town of Al Hadd (page 195).

Bar light is exhibited, at an elevation of 13 feet (4^m0), from a pile structure, situated about 2½ cables south-westward of Kassār Diwan.

South Sitra conical light-buoy, painted in red and white vertical stripes and exhibiting a *white flashing light every twelve seconds*, is moored near the entrance to Khör Kaliya in a position about 4 miles eastward of Kassār Diwan.

50 A shoal, over which there is a least depth of 11 feet (3^m4), lies just outside the entrance ; but deep channels on either side of it lead up to the bar. A conical light-buoy, painted in black and white bands, surmounted by a cone and exhibiting a *white flashing light every two*

Chart 3792, with plan of Khor Kaliya.

seconds, is moored off the south-eastern end of this shoal, about a mile south-eastward of Kassâr Diwan.

A spar buoy is moored about 8 cables south-south-eastward of Kassâr Diwan; similar buoys are situated about $2\frac{1}{4}$ miles south-eastward and $2\frac{1}{4}$ miles east-south-eastward, respectively, of Kassâr Diwan, the former marking the shoal bank on the southern side of the approach to Khôr Kaliya, and the latter the south-eastern extremity of the shoal bank on the northern side.

Old Khôr Kaliya beacon, which has been damaged, is small and 10 inconspicuous and stands nearly 2 cables within the eastern edge of the reefs on the western side of the entrance of the inlet, about half a mile westward of Kassâr Diwan.

New Khôr Kaliya beacon stands about 400 feet (121^m9) north-eastward of the old one; it consists of a pole painted in black and 15 white bands, surmounted by a black ball, 26 feet (7^m9) in height.

Triad beacon is situated on the edge of the reef about 2 cables north-eastward of New Khôr Kaliya beacon.

A conical light-buoy, painted in black and white bands, surmounted by a cone and exhibiting a green flashing light every two seconds, is 20 moored about $4\frac{1}{2}$ cables northward of Triad beacon.

A conical buoy, painted in red and white vertical stripes, and a conical buoy, painted in black and white chequers, are moored, respectively, about $6\frac{1}{2}$ cables north-north-westward and 9 cables north-westward of Kassâr Diwan (*Lat. 26° 11' N., Long. 50° 40' E.*).

25

The entrance channel across the middle of the bar, over which there is a least depth of 13 feet (4^m0), situated close westward of the Bar light structure, is about 60 yards (54^m9) wide; it shoals abruptly on its south-eastern side and gradually on its north-western side. Southward of the entrance are the reefs which extend from the whole of 30 the eastern side of Bahrein island towards Ras 'Ashairiq (*see page 192*).

Charts 3792, 3790.

As Sitra is an island, situated with its north-eastern extremity about $2\frac{1}{4}$ miles west-south-westward of Kassâr Diwan; there is a narrow channel, part of which dries, between the western side of the island 35 and Bahrein island. A wharf, connected to the eastern side of As Sitra by a pipe line, is situated about $1\frac{1}{2}$ miles south-south-eastward of Kassâr Diwan. The northern half of the island is covered with high date palms, amongst which is Sitra village and its fort. Mahâna as Saghira is a small village at the southern end of As Sitra; there is a 40 wide and deep channel about half a mile eastward of the village, which leads southward, but it has not been examined. About $1\frac{1}{2}$ miles south-westward of Mahâna as Saghira is Mahâna al Kabira, on Bahrein island.

Chart 3792, with plan of Khor Kaliya.

45

Ras al Jasra, on which there is a village, a flagstaff, 73 feet (22^m3) high, a water tower, and a detached date grove, lies about 2 miles northward of the northern extremity of As Sitra.

A light is occasionally exhibited, at an elevation of 47 feet (14^m3), from the flagstaff on Ras al Jasra.

50

A pier, with a depth of about 5 feet (1^m5) at its head, extends south-south-eastward from a position about $3\frac{1}{2}$ cables south-south-westward of Ras al Jasra. A light is occasionally exhibited, at an elevation of 27 feet (8^m2), from the head of this pier.

Charts 2837b, 748b.

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A causeway crosses the north-western end of the inlet between Manāma and Muharraq, but it does not obstruct the boat passage.

The middle of the inlet is occupied by an extensive shoal, over which there is a least depth of 7 feet (2^m1), sand, but there is a considerable area around the shoal which affords good anchorage, sheltered from the shamāl.

Kassār Diwan, on which there is a small cairn surmounted by a staff, is a rock, about one foot (0^m3) high, lies on the southern extremity of the reef which extends about $3\frac{1}{4}$ miles southward from the town of Al Hadd (page 195).

Bar light is exhibited, at an elevation of 13 feet (4^m0), from a pile structure, situated about $2\frac{1}{2}$ cables south-westward of Kassār Diwan.

South Sitra conical light-buoy, painted in red and white vertical stripes and exhibiting a *white flashing* light *every twelve seconds*, is moored near the entrance to Khör Kaliya in a position about 4 miles eastward of Kassār Diwan.

A shoal, over which there is a least depth of 11 feet (3^m4), lies just outside the entrance; but deep channels on either side of it lead up to the bar. A conical light-buoy, painted in black and white bands, surmounted by a cone and exhibiting a *white flashing* light *every two*

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Old Khôr Kaliya beacon, which has been damaged, is small and inconspicuous and stands nearly 2 cables within the eastern edge of the reefs on the western side of the entrance of the inlet, about half a mile westward of Kassâr Diwan. 10

New Khôr Kaliya beacon stands about 400 feet (121^m9) north-eastward of the old one ; it consists of a pole painted in black and white bands, surmounted by a black ball, 26 feet (7^m9) in height. 15

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A conical buoy, painted in red and white vertical stripes, and a conical buoy, painted in black and white chequers, are moored, respectively, about $6\frac{1}{2}$ cables north-north-westward and 9 cables north-westward of Kassâr Diwan (*Lat. $26^{\circ} 11' N.$, Long. $50^{\circ} 40' E.$*). 25

The entrance channel across the middle of the bar, over which there is a least depth of 13 feet (4^m0), situated close westward of the Bar light structure, is about 60 yards (54^m9) wide ; it shoals abruptly on its south-eastern side and gradually on its north-western side. Southward of the entrance are the reefs which extend from the whole of the eastern side of Bahrein island towards Ras 'Ashairiq (*see page 192*). 30
Charts 3792, 3790.

As Sitra is an island, situated with its north-eastern extremity about $2\frac{1}{4}$ miles west-south-westward of Kassâr Diwan ; there is a narrow channel, part of which dries, between the western side of the island and Bahrein island. A wharf, connected to the eastern side of As Sitra by a pipe line, is situated about $1\frac{1}{2}$ miles south-south-eastward of Kassâr Diwan. The northern half of the island is covered with high date palms, amongst which is Sitra village and its fort. Mahâna as Saghira is a small village at the southern end of As Sitra ; there is a wide and deep channel about half a mile eastward of the village, which leads southward, but it has not been examined. About $1\frac{1}{2}$ miles south-westward of Mahâna as Saghira is Mahâna al Kabira, on Bahrein island. 35

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A light is occasionally exhibited, at an elevation of 47 feet (14^m3), from the flagstaff on Ras al Jasra. 50

A pier, with a depth of about 5 feet (1^m5) at its head, extends south-south-eastward from a position about $3\frac{1}{2}$ cables south-south-westward of Ras al Jasra. A light is occasionally exhibited, at an elevation of 27 feet (8^m2), from the head of this pier.

Charts 2837b, 748b.

Chart 3792, with plan of Khor Kaliya.

A shoal, with a least depth of one foot ($0^m 3$), lies about $6\frac{1}{2}$ cables south-eastward of the flagstaff on Ras al Jasra; it is marked by Shoreham beacon.

5 Khôr Lupin opens into the south-western corner of Khôr Kaliya southward of Ras al Jasra and is an extensive shallow backwater, with depths of 8 feet ($2^m 4$), but there is no clear passage into it. The best entrance is northward of Jazirat Nebi Saleh, about $1\frac{1}{4}$ miles south-westward of Ras al Jasra, where a depth of 6 feet ($1^m 8$) may be obtained at high water. Owing, however, to the existence of many fish traps in the entrance, navigation into Khôr Lupin is not feasible. Jazirat Nebi Saleh is covered with date palms, and lies on the south-western part of the middle reef in Khôr Lupin.

There are two detached coral patches, with depths of one and 3 feet ($0^m 3$ and $0^m 9$), respectively, lying close together about one mile northward of Ras al Jasra.

A light is occasionally exhibited from the Shaikh's palace (page 199).

20 A pier, with a depth of about 5 feet ($1^m 5$), at the steps at its head, extends eastward from a position about 4 cables north-eastward of the Shaikh's palace; it is a good landing place.

Ras an Nannas, on which there is a village, is a low sandy point, situated three-quarters of a mile north-north-eastward of the Shaikh's palace. There is a small jetty close southward of the point.

25 Tide gauge.—There is a tide gauge, the zero corresponding with chart datum, about 6 cables southward of Kassâr Diwan.

Mooring buoys.—There are some mooring buoys south-eastward of Shoreham beacon.

Charts 3792, with plan of Khor Kaliya, 3790.

Anchorages—Directions.—The best anchorage in Khôr Kaliya **30** is about $1\frac{1}{2}$ miles within its entrance, between the middle sand bank and the eastern reef, in depths of from 24 to 28 feet ($7^m 3$ to $8^m 5$). The inlet is frequented by native craft, but these vessels proceed to its head and anchor close off the town of Muharraq.

Warships usually anchor on the western side of the middle ground **35** within Khôr Kaliya, off Ras al Jasra (*Lat. 26° 12' N., Long. 50° 37' E.*).

There is good anchorage outside Khôr Kaliya, with Kassâr Diwan bearing 284° , distant about $2\frac{1}{2}$ miles, in a depth of $8\frac{1}{2}$ fathoms ($15^m 5$), mud and sand. H.M.S. *Ormonde*, in 1932, rode out a shamâl in this anchorage.

40 From Bahrein light-vessel, a vessel bound for Khôr Kaliya should steer to pass south-eastward of North Sitra and South Sitra light-buoys, thence steer to pass south-eastward of the light-buoy marking the south-eastern edge of the middle ground outside the entrance to Khôr Kaliya; then bring Old Khôr Kaliya beacon in line with Manâma wireless mast, bearing 309° , which just clears the south-western edge of the middle ground and leads across the bar. After passing south-westward of Bar light-beacon course may be shaped for the anchorage.

Care is necessary in rounding the light-beacon as the tidal stream **50** runs at great strength, setting north-westward with the rising tide and south-eastward with the falling tide, attaining a rate of 5 knots or over, at springs. Slack water rarely exceeds 15 minutes, and at low water springs is negligible.

It is unsafe for vessels with a draught of more than 10 feet ($3^m 0$) to

Charts 2837b, 748b.

Charts 3792, with plan of Khor Kaliya, 3790.

enter Khör Kaliya. Vessels which enter should rely chiefly on fixing their position frequently and on seeing the reefs ; for this reason, it is advisable to enter in the morning and leave in the evening. If possible, the bar should be crossed at slack water.

Tidal streams.—Within Khör Kaliya the tidal streams run at a rate of about half a knot.

Chart 3790, 2837b.

DÖHAT AS SALWA AND APPROACHES.—Western side of Bahrein island.—**Coast.**—**Dangers.**—On the western coast of Bahrein island the date palms, instead of being continuous, as on the northern coast, grow in clumps. Reefs and shallow banks fringe the coast and extend from 4 to $4\frac{1}{2}$ miles offshore for some distance southward of Budai'a (page 196), situated on the north-western point, rendering approach, except in small native craft, impossible.

Jazirat ar Raqah (Raka), 5 feet (1^m5) high and covered with scrub, lies one mile south-westward of Budai'a, and Jazirat Jidi (Cliff islet), lies about $1\frac{1}{2}$ miles westward of Jazirat ar Raqah ; its western end is a cliff, 52 feet (15^m8) high, but its eastern end is low and sandy.

Umm Na'sān, the northern end of which is situated about one mile southward of Jazirat Jidi, is low and sandy, but on it are two rocky peaks ; the one, rising to an elevation of 66 feet (20^m1) about half a mile within the western point of the island, is conspicuous ; the other, about half a mile farther north-eastward, is 25 feet (7^m6) high. The reef on which these islands lie extends about $1\frac{1}{4}$ miles westward from Jazirat Jidi (*Lat. 26° 12' N., Long. 50° 24' E.*) and about three-quarters of a mile westward and southward from the western part of Umm Na'sān.

Chart 2837b.

Az Zallāq is a small pearl village about 10 miles southward of Budai'a. Anchorage may be obtained off this village, in a depth of 5 fathoms (9^m1), about $2\frac{1}{2}$ miles offshore, with the higher peak of Umm Na'sān bearing 335° ; the anchorage should be approached with the village bearing about 081° ; the depths decrease suddenly from 5 to 3 fathoms (9^m1 to 5^m5).

Landing is good at Az Zallāq, but bad both northward and southward of it.

Southward of Az Zallāq, all cultivation and date palms cease, the country becoming a stony desert with small patches of camel grass and scrub in places. Shoals extend a considerable distance offshore.

Ras al Bar, the southern point of Bahrein island, is a long low sandy point, which cannot be approached within about 5 miles on account of the shallow flats. Eastward and northward of the point the extensive reef fringing the eastern coast of the island debars all communication except in small boats.

Chart 3790.

Coast westward of Bahrein island.—Ras Kuwakib is situated on the mainland of Nejd about 15 miles north-westward of the north-western extremity of Bahrein island. Qal'at al Husain is a small fort, close to Ras Kuwakib.

A reef extends about 8 miles eastward and north-eastward from Ras Kuwakib, and near its outer edge are sand banks, which dry, see page 206.

Chart 748b.

Chart 3790.

Jabal adh Dhahrān, about $5\frac{1}{2}$ miles south-westward of Ras Kuwakib, is the conspicuous south-eastern summit of a range of hills; it is a long sloping hill from the middle of which rises abruptly a remarkable ⁵ and rather flat-topped peak, 300 feet ($91^{\text{m}}4$) high. Jabal al Mudra (chart 2837b), the north-western summit of the range, is conical and rises to an elevation of 416 feet ($126^{\text{m}}8$) about $3\frac{1}{2}$ miles north-westward of Jabal adh Dhahrān.

Tall i Zabānat is one of a group of four sand hills near the coast ¹⁰ about 10 miles southward of Ras Kuwakib; an isolated sand hill rises to an elevation of 55 feet ($16^{\text{m}}8$) about 2 miles farther southward; both Tall i Zabānat and the isolated sand hill are good marks.

Döha 'Ain as Saih, about 13 miles southward of Ras Kuwakib, is a shallow bay, in the entrance to which there is a depth of about 6 feet ¹⁵ ($1^{\text{m}}8$). About $1\frac{1}{2}$ miles outside the entrance, and lying parallel with the coast is a long narrow sand bank, with a least depth of 4 feet ($1^{\text{m}}2$). *Chart 2837b.*

Döhat adh Dhulūm (Duhat Dhalum) is an extensive shallow bay, entered westward of Kureya, a low sandy point about 7 miles southward of the entrance to Döha 'Ain as Saih. The shores are uninhabited. Numerous sand hills extend inland for some distance from the northern and western shores of this bay; but only the 55-foot ($16^{\text{m}}8$) hill mentioned above is at all conspicuous.

Hamadiya hill (*Lat. $25^{\circ} 59' N.$, Long. $50^{\circ} 05' E.$*), on the southern ²⁵ side of Döhat adh Dhulūm, is 120 feet ($36^{\text{m}}6$) high and extends eastward and westward for about one mile; North hill, $2\frac{1}{2}$ miles west-north-westward of Hamadiya hill, is small, round, and about 100 feet ($30^{\text{m}}5$) high; both hills are good marks.

Charts 3790, 2837b.

30 Channels westward of Bahrein island.—Tidal streams.—Between the north-western extremity of Bahrein island and the mainland westward the passage is much obstructed by reefs intersected by narrow and shallow channels of which the easternmost is considered the best and is the only one that has been examined.

35 In 1903, H.M.S. *Lapwing*, proceeding from Bahrein harbour to Al 'Oqair (page 205), passed between Khör Fasht and Marwadi reef at mid-day about one hour after high water, when the reefs were not seen and no tidal stream was experienced.

Jabal adh Dhahrān, Jabal ad Dukhkhān, the higher peak on Umm ⁴⁰ Na'sān, Jazīrat Jidi, the Portuguese fort, and the northern extremity of the trees on Muharraq island are good marks by which to fix the position of the vessel when passing through the narrows westward of Umm Na'sān island; but great difficulty is occasionally caused by refraction and mirage. The sandy islets on the western side of ⁴⁵ the passage are conspicuous. It is not desirable to proceed through the passage with a favourable tidal stream.

In the channel westward of Umm Na'sān, the tidal streams set southward and northward, attaining, at springs, a rate of from 2 to 3 knots.

50 Chart 2837b.

Döhat as Salwa. This inlet is entered between Ras as Sauwād (page 192) and Ras Saiya, a low sandy peninsula, about 28 miles westward. The eastern side of the inlet is bordered mostly by a sandy shore rising to sand hills, which, in the northern half, are close

Chart 748b.

Chart 2837b.

to the coast, and in the southern half farther inland. The western side is indented by a succession of bays separated by headlands consisting of sand dunes. Nowhere in the inlet have any great depths been found. 5

Al 'Oqair is situated on the western side of an inlet entered between the southern extremity of Ras Saïya, and Ras as Sufaira, about one mile southward ; there are depths of from 4 to 6 fathoms ($7^{\text{m}}3$ to $11^{\text{m}}0$) as far in as the jetty. Al 'Oqair consists of a few buildings, a Custom house and an old fort, the latter being a low structure with four towers, about 60 feet ($18^{\text{m}}3$) high, near it. The jetty, at the head of which there is a depth of 3 feet ($0^{\text{m}}9$), is situated near the fort. A shoal, with depths of from 4 to 6 feet ($1^{\text{m}}2$ to $1^{\text{m}}8$), lies off the entrance to the inlet. 10

If intending to anchor off the eastern side of the peninsula, caution 15 is necessary when approaching it, as the depths decrease very suddenly.

Jazirat Zakhnūniya, the northern end of which is situated about 3 miles south-eastward of Ras as Sufaira, is a bare sandy mound on which are a village and a fort. Ras Umm al Awa, a sand hill, terminates in a rocky point, between which and the coast of Jazirat Zakhnūniya there is a narrow shallow channel. Between the southern point of the island, abreast which the coast of Nejd ends and that of Trucial 'Omān begins, and the north-western extremity of a large promontory southward of it, is a still narrower channel in which there is a depth of $4\frac{1}{2}$ feet ($1^{\text{m}}4$). 20
25

Anchorage may be obtained, in a depth of 20 feet ($6^{\text{m}}1$), about a quarter of a mile offshore, southward of Ras Huwaiql, situated about 30 miles south-south-eastward of Ras Umm al Awa ; landing abreast the anchorage is good, the beach being steep-to. 30

Dōhat al Husain (Duhat Hashm Husaini) is entered about 14 miles south-south-eastward of Ras Huwaiql (*Lat. $25^{\circ} 07' N.$, Long. $50^{\circ} 38' E.$*) ; a few miles westward of this bay is Hashm Husaini, a sandstone range, which rises in a bluff about 300 feet ($91^{\text{m}}4$) high, which is a good mark. Southward of Dōhat al Husain there are depths of about 4 feet ($1^{\text{m}}2$) within half a mile of the coast. A plain extends 2 or 3 miles inland to hills about 300 feet ($91^{\text{m}}4$) high. Salwa village is situated at the head of Dōhat as Salwa, and in its vicinity are some ruins and three groups of palm trees. 35

For tidal streams in Dōhat as Salwa, see page 209. 40

Chart 3790.

BAHREIN HARBOUR TO AL QATIF.—Dangers.—Westward of Fasht al Jārim (page 194) there is an area much encumbered by reefs and shoals, through which Khōr al Bāb leads from Bahrein harbour to Al Qatif (page 207). In the vicinity of Ras as Sala, about $1\frac{1}{2}$ miles westward of Kalai'a rock (page 194), the reef is steep-to, but elsewhere on the eastern side of the channel the depths decrease gradually towards the reef. This channel should not be used by vessels with a draught of more than 15 feet ($4^{\text{m}}6$), and all vessels should employ a pilot from Manāma. 45

The southern entrance lies northward of West spit (page 196), whence it trends north-westward between Khōr Fasht and Fasht al Jārim. The channel is about a mile wide over its greater part and has several patches with depths of 18 feet ($5^{\text{m}}5$) in the fairway ; an exten-

Chart 748b.

Chart 3790.

sive shoal, with a least depth of 13 feet ($4^{\text{m}}0$), lies in the fairway about 4 miles northward of Khōr Fasht.

Chaschus, 4 feet ($1^{\text{m}}2$), high, is one of several sand banks on the outer part of the reef which extends about 8 miles north-eastward from Ras Kuwakib (see page 203). These sand banks undergo considerable alteration due to the strong winds and tidal streams ; they are usually visible from south-eastward when the tide is below mean sea level. Shoals, with depths of from 4 to 18 feet ($1^{\text{m}}2$ to $5^{\text{m}}5$), lie within $4\frac{1}{2}$ miles east-south-eastward and $3\frac{1}{2}$ miles north-eastward, of Chaschus and form the western side of Khōr al Bāb.

Rak as Surra, on the eastern side of Khōr al Bab, is a pearl bank, over which there is a least depth of 12 feet ($3^{\text{m}}7$) ; it extends about $6\frac{1}{2}$ miles north-westward from Fasht al Jārim and over its rocky parts the sea is much discoloured. The bank, deepening eastward to 4 fathoms ($7^{\text{m}}3$), joins Adāla bank (page 194). Detached patches, over which there are depths of from 15 to 18 feet ($4^{\text{m}}6$ to $5^{\text{m}}5$), lie from $1\frac{1}{2}$ to 5 miles north-eastward of Rak as Surra.

Najwa is a reef about 7 miles northward of Chaschus. On it are two sand banks ; the larger, in the middle of the reef, dries 4 feet ($1^{\text{m}}2$) and can usually be seen from south-eastward when the tide is below mean sea level ; the other, on the southern end of the reef, is visible only at low water. Najwa lies on a bank, with depths of less than 18 feet ($5^{\text{m}}5$), which extends about 2 miles south-south-eastward from the southern extremity and the same distance north-north-eastward from the northern extremity of the reef.

Between Rak as Surra and Najwa (*Lat. 26° 33' N., Long. 50° 15' E.*) there is a channel, with depths of from 5 to 8 fathoms ($9^{\text{m}}1$ to $14^{\text{m}}6$) in the fairway, and between Najwa and Ras Khali (page 207), about $4\frac{1}{2}$ miles south-westward, there is a channel with a least width of $1\frac{1}{2}$ miles, with depths of from 3 to 7 fathoms ($5^{\text{m}}5$ to $12^{\text{m}}8$).

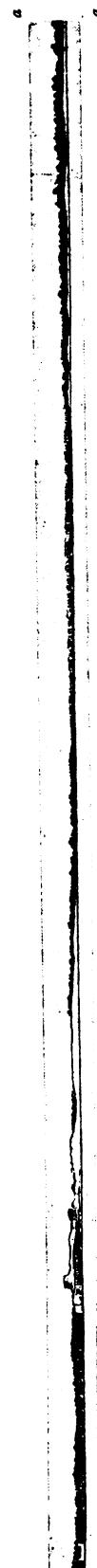
Directions.—Vessels entering Khōr al Bāb from Bahrein harbour must guard against the west-going tidal stream which, at times, is very strong along the southern lines of Khōr Fasht and Marwadi reef. When northward of Khōr Fasht, after losing sight of the wireless mast at Manāma and Jabal ad Dukhkhān, the only marks are Kalai'a, rock on Fasht al Jārim, Jabal adh Dhahrān, Jabal al Mudra, and when near them, Chaschus sand bank and Najwa. A vessel should steer to pass through the fairway between Najwa, and Rak as Surra. After rounding the northern end of Najwa, in a depth of not less than 5 fathoms ($9^{\text{m}}1$), the vessel may steer for Kas at Tannūra (page 207).

COAST OF NEJD.—Dangers.—About 8 miles north-westward of Ras Kuwakib (page 203) is Dammām, the principal fort of which has a conspicuous tower, about 70 feet ($21^{\text{m}}3$) high, situated on an islet on the coastal reef and nearly joined to the mainland ; there is a smaller fort on the mainland. The houses and forts are in ruins.

The channels through the reefs, by which the native vessels approach the town, are shallow and are probably only practicable at high water. The island and the channels and coast behind it have not been examined and are only approximately charted ; there is reported to be a narrow inshore channel which dries.

South-westward of Dammām are some rocky hillocks, about 50 feet

To face page 207.



Dārin fort,
bearing 270°,
4 miles.



Tārūt fort
(no longer visible)
from seaward.

View, in two parts, of Jazirat Tārūt from eastward.

(Original dated 1908.)

Chart 3790.

($15^{\text{m}2}$) high, which, on account of their resemblance to the hulls of bāgalas, are called by the Arabs Marakibat Sadūn.

Ras Khali, which dries, lies about 5 miles east-north-eastward of Dammām fort. About $4\frac{1}{2}$ miles north-westward of Dammām fort is As Saīhāt, a town, in which there is a large fort ; westward of the town there is a sand hill, probably about 100 feet ($30^{\text{m}5}$) high. Thick date groves extend northward from the town, past Al Qatif for a distance of about 8 miles. On the coast, midway between As Saīhāt and Al Qatif, is 'Anik fort.

Charts 3790, 3788.

Al Qatif is an important town about $4\frac{1}{2}$ miles north-north-westward of As Saīhāt. It is situated in an oasis of the same name which extends about 9 miles northward and southward of the town and lies about 3 miles inland ; this oasis is bounded northward and westward by desert. In the town there is a fort, in the southern part of which there is a minaret, from 80 to 100 feet ($24^{\text{m}4}$ to $30^{\text{m}5}$) high, and in the north-western corner is the citadel. About 5 miles westward of the town is Miliolite hill, 68 feet ($20^{\text{m}5}$) high. The climate of the oasis is damp and unhealthy ; malaria is prevalent.

Jazirat Tārūt lies on the coastal reef which extends about 7 miles offshore ; on its eastern part are thick groves of high date palms. (See view facing this page). Dārin (*Lat. $26^{\circ} 33' N.$, Long. $50^{\circ} 04' E.$*), on the southern extremity of Jazirat Tārūt, is a town in which there is a square fort with a conspicuous tower.

Anchorage may be obtained, in a depth of 3 fathoms ($5^{\text{m}5}$), with Dārin fort bearing 270° , distant about $4\frac{1}{2}$ miles.

Al Qatif town can be reached by boats with a draught of 7 feet ($2^{\text{m}1}$) ; larger boats can enter by Khōr as Saīhāt, a branch of the bight westward of Ras Khali which passes close eastward of As Saīhāt town. Another branch of the bight trends southward and leads to Dammām. About 3 miles eastward of Dārin is the entrance to a small channel, also available to large boats, which, trending westward, leads close past Dārin and joins Khōr as Saīhāt near Burj Abul Lif, a small fort on the reef about $1\frac{1}{4}$ miles westward of Dārin. The main channel passes about $2\frac{1}{2}$ cables eastward of Burj Abul Lif, above which the larger boats cannot go, though there is a small branch which admits such boats close up to the walls of the fort. Another channel, navigable at high water, leads round the northern end of Jazirat Tārūt and joins the channel from Burj Abul Lif off Al Qatif.

A local pilot is necessary to take a boat with a draught of $2\frac{1}{2}$ feet ($0^{\text{m}8}$), or more, up to Al Qatif.

Chart 3789, plan of Ras-at-Tannūra anchorage.

Ras at Tannūra.—Beacon.—Anchorage.—Directions.—This point is the extremity of a strip of sand, with sand hills on its outer edge, which extends south-eastward from the mainland to a position about 5 miles north-eastward of Jazirat Tārūt. It is less than a quarter of a cable wide in places, and the sand hills are from 10 to 30 feet ($3^{\text{m}0}$ to $9^{\text{m}1}$) high, and show up white when the sun shines on them. The extremity of the point is about 3 feet ($0^{\text{m}9}$) high, and consists of level sand over coral. The reefs within the point show up well, especially the large reef off Jazirat Tārūt.

A beacon, consisting of the mast of a dhow, 52 feet ($15^{\text{m}8}$) high, stands close within the extremity of Ras at Tannūra, and is a useful mark for the anchorage.

Charts 2837b, 748b.

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Chart 3789, plan of Ras-at-Tannura anchorage.

The Custom house, off which there is a small pier, which dries, is situated on the western side of the sand strip, about $3\frac{1}{2}$ cables north-westward of the beacon.

5 A bank, with depths of less than 3 fathoms (5^m5), extends $2\frac{1}{2}$ miles southward from the point. The reefs extending from Jazirat Tārūt, and the coastal reef northward of Al Qatif, approach the western side of the sand strip leaving a narrow and tortuous passage which, inside Ras at Tannūra, is about a quarter of a mile wide with a least depth of 18 feet (5^m5), and which extends about 4 miles north-westward.

10 Anchorage may be obtained, in a depth of about 30 feet (9^m1), about one cable offshore between a quarter and half a mile inside Ras at Tannūra. The anchorage is well sheltered from the shamāl, but, the bottom being hard, a good scope of cable should be veered.

15 The kaus sends in a heavy sea, and better shelter will then be found north-westward of Najwa.

For tidal streams at this anchorage, see page 210.

Ras at Tannūra is steep-to and should be rounded at a distance of about one cable; anchorage may then be selected as previously described. When rounding the point, the vessel should have good way on her on account of the eddies and tide-rips. The reefs southward of the entrance are usually visible.

Anchorage may also be obtained, in a depth of about 8 fathoms (14^m6), mud and sand, with the beacon on Ras at Tannūra (*Lat. $26^{\circ} 37' N.$, Long. $50^{\circ} 10' E.$*) bearing 202° , distant one mile. The tidal streams at this anchorage set northward and southward at a rate of from 3 to 5 knots.

A light is exhibited, at an elevation of 30 feet (9^m1), from a black steel pile beacon, with "7" painted in white on its side, situated about $4\frac{1}{2}$ miles northward of Ras at Tannūra. The light was extinguished in 1941.

Chart 3788.

Off-lying dangers.—Lights.—Khaura is an extensive shoal, with a least depth of 12 feet (3^m7), lying with its centre about 8 miles north-eastward of Ras at Tannūra. Shaikh Gata, a bank with a least depth of 22 feet (6^m7), lies eastward of Khaura, being separated by a channel about $2\frac{1}{2}$ miles wide, with depths of from 6 to 12 fathoms (11^m0 to 21^m0).

A 31-foot (9^m4) sandy shoal and a 33-foot (10^m1) patch, sand and coral, lie about 11 miles northward and 7 miles north-north-eastward, respectively of Ras at Tannūra.

Fasht al Eling, with a least depth of 9 feet (2^m7), lies $15\frac{1}{2}$ miles northward of Ras at Tannūra.

A light is exhibited, at an elevation of 30 feet (9^m1), from a black steel pile beacon with "5" painted in white on its side, situated on the south-eastern side of Fasht al Eling. The light was extinguished in 1941.

A detached shoal, with a least depth of 16 feet (4^m9), lies about 4 miles north-eastward of the light structure on the south-eastern side of Fasht al Eling.

50 Fasht Bu Saafa, about 13 miles north-eastward of Fasht al Eling, is a rocky patch on which the sea breaks heavily at times, there being depths of only 3 feet (0^m9) over its shoalest part; at high water, with a calm sea, the shoal cannot always be distinguished; the bottom around it is sand, and the shoal is steep-to.

Chart 3788.

A light is exhibited, at an elevation of 30 feet (9^m1), from a red steel pile beacon, with "2" painted in white on its side, situated about 1½ miles northward of the shoalest part of Fasht Bu Saafa. The light was extinguished, in 1941. 5

For shoals farther eastward, *see* page 193.

A shoal, with a depth of 28 feet (8^m5), lies about 4½ miles west-south-westward of Fasht Bu Saafa. A shoal, with a depth of 30 feet (9^m1), lies about 3 miles east-south-eastward of Fasht Bu Saafa, and an extensive shoal, with a least depth of 27 feet (8^m2), lies about 10 2 miles farther south-eastward. The shoals are frequented by fishermen.

Retlawenna shoals, with a least depth of 19 feet (5^m8), lie about 10 miles west-north-westward of Fasht Bu Saafa. A light is exhibited, at an elevation of 30 feet (9^m1), from a black steel pile beacon, with "3" painted in white on its sides, situated on the southern edge of 15 the shoals. The light was extinguished, in 1941.

Umm al Hamail, a rocky shoal, with a least depth of 6 feet (1^m8), lies about 11½ miles north-westward of Retlawenna shoals. Between them are several detached shoals, with depths of from 9 to 36 feet (2^m7 to 20 11^m0). A shoal with a depth of 15 feet (4^m6), lies about 5 miles east-north-eastward of Umm al Hamail, and two shoals, with depths of 21 and 22 feet (6^m4 and 8^m7), respectively, lie about 7 miles south-south-eastward of Umm al Hamail. Shoals are reported over an extensive area north-westward of Umm al Hamail. 25

Charts 3790, 2837b.

TIDAL STREAMS.—The tidal streams are felt everywhere on the Great Pearl bank, especially near the reefs and islands. From Ras Rākān (*Lat.* 26° 11' *N.*, *Long.* 51° 14' *E.*), the west-going tidal stream sets along the coast, southward into Dōhat as Salwa, between 30 Ras Rākān and Bahrein island. Off Bahrein island and amongst the outlying reefs, the tidal streams are very irregular and are much affected by the wind, but, to a certain extent, they follow the general trend of the reefs, attaining at springs a rate of from one to 2 knots, and even 3 knots at times, but this is very exceptional. 35

Between Bahrein island and Al Qatar, the tidal streams are, for the most part, weak and the rise and fall is slight. There are, however, heavy tide-rips in Dōhat as Salwa, southward of Bahrein island, caused by the sudden alterations in depth. The configuration of the land would point to a greater rise and fall in the latter locality 40 than immediately northward, but no observations have been made.

Careful observations made, in 1901 and 1902, by R.I.M.S. *Investigator*, whilst at anchor between Bahrein island and Hawār island, show that the spring rise never exceeds 3 or 4 feet (0^m9 or 1^m2) in that locality. 45

The tidal stream, from north-eastward, sets southward along the eastern side of Fasht al Jārim, until abreast Ras al Ain, where, joining the stream flowing westward along the northern edge of Jazīrat Khasifa, it turns south-westward into Bahrein harbour.

Northward of Fasht al Jārim and across the eastern part of Shaikh 50 Gata, the tidal streams set south-westward and north-eastward, turning southward and northward, respectively, along the western side of Fasht al Jārim and south-eastward and north-westward be-

Chart 748b.

Charts 3790, 2837b.

tween Fasht al Jārim and Khōr Fasht in Khōr al Bāb, but eastward of and over Khōr Fasht they set southward and northward.

The tidal streams set southward and northward over Khaura shoal,
5 and south-westward and north-eastward between Chaschus and Najwa.

The southern edges of Khaura shoal and Shaikh Gata are marked by overfalls.

The streams set south-eastward and north-westward between Muharraq and Bahrein islands, and eastward of Muharraq island they
10 set southward and northward. In the entrance to Bahrein harbour, northward of Muharraq, they set west-south-westward and east-north-eastward at a rate of from one to 2 knots.

The tidal streams seem to divide and meet near Ras at Tannūra; south-eastward of that point, the general west-going stream sets
15 southward, and the east-going stream, northward; northward of the point, the general west-going stream sets north-westward, and the east-going stream, southward; the general east-going stream appears to set north-eastward from Ras at Tannūra, passing between Fasht Bu Saafa and Al Ashira; but the streams are not strong enough to
20 interfere with safe navigation.

In Ras at Tannūra anchorage the tidal streams set north-westward and south-eastward at a rate of $1\frac{1}{2}$ knots at springs and half a knot at neaps.

Charts 3788, 2837b.

25 COAST OF NEJD.—Dangers.—Continued.—The coast of Nejd between Ras at Tannūra (*Lat. 26° 37' N., Long. 50° 10' E.*) and Ras al Misha'āb, about 125 miles north-westward, is a low sandy or stony desert with, at intervals, a few isolated hills; it is fringed for nearly the whole distance by extensive reefs which, in places, have
30 passages inside them, and there are several low off-lying islets. The water is not usually as clear as it is farther southward, for in places the bottom is of white clay and the shoals do not, in consequence, show up so well. Many patches of whitish muddy colour, apparently indicating shoals, are frequently seen where no change in depth exists,
35 yet the warning of discoloured water must not be disregarded. With the exception of the settlement at Khuwair al Jabal, (page 211) and the villages on Jazirat al Jinna, (page 211), and Jazirat Musallamiya, (page 212) there are neither towns, villages, nor a fixed population on the coast, the only inhabitants being several tribes of Bedouin.

40 The Great Pearl bank decreases in width off this coast, and may be said to end in the vicinity of Jazirat Abu 'Ali (page 211), although pearls are sought on a small scale on some of the banks northward of that island. This part of the Persian gulf has been very incompletely surveyed.

45 *Chart 3789, plan of Dhalaifan anchorage.*

Ras al Qaliya (Kaliya), on which there is a high sand hill, lies about 18 miles north-westward of Ras at Tannūra; foul ground extends nearly $1\frac{1}{2}$ miles from the point. About 4 miles westward of Ras al Qaliya is Ras al Ghār, a cliff, 33 feet ($10^{\text{m}} 1$) high. Jabal Dhalaifain,
50 about $1\frac{1}{2}$ miles south-westward of Ras al Ghār, is a remarkable square black rocky hill, 79 feet ($24^{\text{m}} 1$) high. Ras Basit Shira'a lies about 4 miles north-westward of Ras al Ghār.

Anchorage may be obtained, in a depth of about 9 fathoms ($16^{\text{m}} 5$),

Chart 748b.

Chart 3789, plan of Dhalaifan anchorage.

sand and rock, with Ras al Ghār bearing 199° , distant 3 miles. This anchorage, however, is open to the shamāl, which here blows from north-west to north, and is strong at times. The tidal streams set parallel with the coast at a rate of from one to 2 knots.

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Chart 3788.

Jabal al Bahri, about $1\frac{1}{4}$ miles north-westward of Ras Basit Shira'a, is a high sand hill close off a slightly projecting point, on which is the settlement of Jubail, with a water tower, about $1\frac{1}{4}$ miles westward of the point. Farther inland are some high sand hills and on the coast a few miles north-westward of it is a stony hillock. Khuwair al Jabal is a small creek on the northern side of Jabal al Bahri; it has a good boat anchorage, protected from most winds except the nashī.

Chart 2837b.

Jazirat al Bātina, about 18 miles north-westward of Jabal al Bahri, is a peninsula forming the western shore of Dōhat Abu 'Ali, a shallow bay. Jazirat Abu 'Ali lies close northward of Jazirat al Bātina, and between them there is a shallow narrow passage. The ruins of a tomb stand on a small hill close within Ras Abu 'Ali (*Lat. $27^{\circ} 18' N.$, Long. $49^{\circ} 39' E.$*), the eastern extremity of Jazirat Abu 'Ali. A sand spit, which dries, extends about 4 miles eastward from Ras Abu 'Ali; at low water numerous cormorants settle on the spit.

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Anchorages.—Good anchorage during a shamāl may be obtained by vessels with local knowledge, in Dōhat Abu 'Ali southward of Ras Abu 'Ali, there being but little reef on the southern side of the point, though shoal water extends nearly 4 miles offshore from the western side of the bay. In depths of less than 9 fathoms ($16^{\text{m}} 5$), the bottom is hard sand, but in greater depths it is mud; the soundings are fairly regular.

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The best position in which to anchor is, in a depth of about 5 fathoms ($9^{\text{m}} 1$), with the ruins of the tomb bearing 000° , distant about one mile; within this distance the depths decrease rapidly towards the reef, which there extends about half a mile offshore. A small bight, westward of the ruins, affords complete shelter to small native craft, but for larger vessels there is no shelter in the bay from the kaus which sends in a heavy sea. Anchorage, sheltered from the kaus, may, however, be obtained northward of Ras Abu 'Ali, in a depth of 4 fathoms ($7^{\text{m}} 3$), with the ruins bearing about 170° , distant about 3 miles.

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When rounding the spit extending from Ras Abu 'Ali, its eastern extremity should be given a wide berth, for the depths shoal very rapidly and a heavy sea breaks on its weather side.

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Dōhat ad Dafi is an extensive shallow inlet extending south-eastward on the western side of Jazirat al Bātina, and terminates in a swamp. Between the north-western side of Jazirat Abu 'Ali and Ras al Bidya, a low sandy point with tufts of grass on it, about 10 miles north-westward, there is an extensive but shallow bay, in the northern part of which is Dōhat Musallamiya.

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Jazirat al Jinna, about $2\frac{1}{2}$ miles southward of Ras al Bidya' and about $1\frac{1}{2}$ miles off the western shore of the bay, is of a light colour, its western part being low and its summit level, with a large fort and round tower on it. On the northern side of the island there is a village. Sand banks, which dry, extend about 2 miles northward and one mile eastward from the island. There is a small basin, with depths of

Chart 748b.

Chart 2837b.

3 fathoms ($5^m 5$) in it, available for boats, close north-eastward of the island ; the entrance, which is from eastward, dries.

Dōhat Musallamiya extends about $9\frac{1}{2}$ miles westward from Ras al Bidya'. The entrance is about 2 cables wide between the point and the reefs and sand banks extending northward from Jazirat al Jinna, which latter are distinguishable even at high water ; in places there are bars, over which the depths are about one fathom ($1^m 8$), but within them there is a deep, though somewhat tortuous channel, 10 which leads nearly up to Jazirat al Musallamiya (*see below*) and at high water boats are able to get to the village which stands amongst some trees on the eastern side of that island. The bay is encumbered with numerous sandbanks and reefs but, being usually visible, are easily avoided. The mainland on the northern side of the bay is everywhere 15 low ; but just southward of Jazirat al Musallamiya there is a conspicuous cliffy bluff, the coast for some miles southward of which is from 50 to 80 feet ($15^m 2$ to $24^m 4$) high with a growth of shrubs.

Jazirat al Musallamiya, which has some low sand hills on it, lies about 5 miles westward of Ras al Bidya' (*Lat. $27^{\circ} 26' N.$, Long. $49^{\circ} 21' E.$*). 20 A branch from Dōhat Musallamiya, in which there are depths of about 3 fathoms ($5^m 5$), extends southward, between Jazirat al Jinna and the mainland, from a position just inside Ras al Bidya' ; a channel leads from this branch to the village on the island, giving access by boat to the latter at high water.

25 The best anchorage, when visiting either Jazirat al Jinna or Musallamiya, is about 5 miles north-eastward of Jinna fort, in depths of 4 or 5 fathoms ($7^m 3$ or $9^m 1$) ; the anchorage affords but little shelter from either the shamāl or the kaus, and inshore of it are extensive sand banks with numerous ridges and reefs running northward and 30 southward. When anchoring in this locality allowance must be made for a difference in the level of the sea due to the action of the winds, as well as that due to the tides ; in a position where a depth of 18 feet ($5^m 5$) was obtained, after a strong kaus had blown for 12 hours, there was, on the following day, a depth of only 14 35 feet ($4^m 3$), and that, when a strong shamāl had followed the kaus, and had been blowing for several hours.

40 Jazirat al Jinna is approached through the main channel, trending west-south-westward from its entrance, until the village on that island bears 180° ; thence the village may be steered for, keeping close to the sand banks on the eastern side of the channel.

Musallamiya village is approached through the main channel, steering towards the conspicuous bluff on the mainland southward of it ; when close to the mainland the channel turns towards the island.

About $8\frac{1}{2}$ miles north-north-westward of Ras al Bidya' is Ras al Ghār, a low point, close within which are some brownish rocky hillocks overgrown with shrubs ; there is little coastal reef between these points, but foul ground extends about 5 miles north-north-eastward from Ras al Ghār.

Charts 3788, 2837b.

50 **Inshore channel.—Dangers.—Caution.**—From Ras at Tannūra, a navigable channel, through which a depth of 5 fathoms ($9^m 1$) could probably be carried in daylight, leads north-westward for about 70 miles, its north-western entrance lying between Ras al Ghār and Fasht al Kash (page 213).

Charts 3790, 2837b, 748b.

Charts 3788, 2837b.

A shoal, with a depth of 17 feet (5^m2), lies about 4½ miles north-north-eastward of Ras al Qaliya. Daka, a shoal which nearly dries, lies about 6 miles north-north-eastward of Ras Basit Shira'a.

An extensive area from about 13 to 22 miles wide, extending about 45 miles north-westward from a position about 13 miles north-north-eastward of Ras al Qaliya, is only partially surveyed, but is known to be encumbered with shoals with deep channels between them; extreme caution is necessary in navigating this area.

Jazirat Jaraid, about 14 miles north-north-eastward of Jabal al Bahri, is a sand islet about 12 feet (3^m7) high, and covered with thin scrub; it is fringed by a reef which extends about half a mile from its northern side. The islet appears to be a breeding place for cormorants.

Chart 2837b.

Jazirat Janā was, in 1912, charted about 9 miles east-north-eastward of Ras Abu 'Ali (*Lat. 27° 18' N., Long. 49° 39' E.*), but reported to lie about 4 miles farther eastward, is a sand islet, about 10 feet (3^m0) high, and is covered with thin scrub. A small reef, which is steep-to, fringes the islet and extends about three-quarters of a mile from its northern side. Shelter from either the shamāl or the kaus can be obtained under its lee.

Fasht al Kash extends about 5 miles north-eastward from a position about 12 miles north-eastward of Ras al Bidya'.

A shoal, which dries, the position of which is approximate, was reported, in 1934, to lie about 8½ miles north-eastward of Ras al Ghār. A shoal, with a depth of 16 feet (4^m9), lies about 7½ miles north-eastward and a reef with a depth of 3 feet (0^m9), lies about 6½ miles north-westward of the same point.

Directions.—A vessel approaching the inshore channel from northward should make Jazirat al Harqūs (page 214) or Jazirat al Qiran (page 214), and thence steer for a position on the mainland close south-eastward of Ras al Ghār, taking care to avoid the shoal which dries, situated about 8½ miles north-eastward of that point. The depths in the approach are very irregular and as the entrance to the channel between Fasht al Kash and the mainland has been only partially sounded, only vessels with local knowledge should proceed through it.

Outlying islets and dangers.—Beacons.—Tidal streams.—Within 55 miles north-eastward of Ras al Ghār are five very low islets, which are steep-to. They are difficult to make out in the haze during and after a shamāl, especially in summer, and should never be approached at night. The tidal streams in the vicinity of this group of islets set westward and eastward; but the times of the turn of the streams are not known; between Jazirat 'Arabi and Jazirat Fārsi they appear to attain a rate of about one knot. If anchoring off any of these islets, caution must be exercised when approaching them, for the depths shoal rapidly and soundings give no warning.

Chart 3452, plan of Jazirat Fārsi.

Jazirat Fārsi, the outer islet of the group, lies about 55 miles north-eastward of Ras al Ghār; it is about 10 feet (3^m0) high and is overgrown with coarse grass and brushwood; the beach is of white sand and its fringing reef extends from 3 to 4 cables from its northern end, for a greater distance from its western side, and about one cable from its

Chart 748b.

Chart 3452, plan of Jezirat Farsi.

southern side ; it shows up plainly. On the south-eastern side of the islet, protected from the sea by rocks, is a small lagoon which may be entered by pulling boats at its southern end. A wooden daymark, 5 30 feet (9^m1) in height and surmounted by an iron disc, stands on the summit of the southern part of the islet. It was reported, in 1940, to have fallen down. A pyramidal beacon, 12 feet (3^m7) high, composed of loose stones, stands on the northern end of the islet. In 1924, H.M.S. *Cyclamen* anchored south-westward of the islet ; and, in 1931, H.M.S. 10 *Triad* anchored, in a depth of 27 fathoms (49^m4), with the pyramidal beacon bearing 338° , distant about half a mile. At certain seasons flocks of small birds settle on the islet and their cries can be heard on a calm night at a distance of about one mile, sometimes even before the islet is sighted ; turtle abound.

Chart 3452, plan of Jezirat Arabi.

Jazirat 'Arabi (*Lat. $27^\circ 47' N.$, Long. $50^\circ 11' E.$*), about 13 miles southward of Jazirat Farsi, is about 10 feet (3^m0) high, and consists of sand on a rocky base. The islet is fringed by a reef, which, however, does not extend more than a quarter of a mile offshore. A cairn, 20 about 6 feet (1^m8) high, stands on the northern end of the islet. In 1924, H.M.S. *Cyclamen* anchored south-westward of the islet ; and, in 1931, H.M.S. *Triad* anchored, in a depth of about 25 fathoms (45^m7), with the cairn bearing 330° , distant about $3\frac{1}{2}$ cables. Landing is bad, and at low water it is almost impossible to get a boat on shore on 25 account of the large number of drying rocks. The islet swarms with birds, chiefly cormorants, and in the season it is covered with nests and young ones, so that it is scarcely possible to walk without treading on eggs. At one time it had on it a deposit of guano a few inches thick ; it is visited by fishermen for turtle.

30 A submerged obstruction was reported, in 1920, to lie in a position about 12 miles west-north-westward of Jazirat 'Arabi.

Chart 2837b.

Jazirat al Harqūs (Harkus), about 33 miles north-eastward of Ras al Ghār, is a sandy islet, about 3 feet (0^m9) high, with a narrow fringing reef. The islet does not appear to be frequented by birds. An iron beacon, 30 feet (9^m1) in height, surmounted by a triangle, stands on the middle of the islet.

Jazirat al Qiran (Karan), about 18 miles west-south-westward of Jazirat 'Arabi, is only a few feet high, quite level, and covered with brushwood. A fringing reef surrounds the islet, extending about one mile north-westward, and half a mile south-eastward. The islet is frequented by fishermen. Anchorage may be obtained on the south-eastern side of the islet. Vessels should not anchor in depths of less than 17 fathoms (31^m1), for the reef is very steep-to, a depth of 10 45 fathoms (18^m3) being found within a few yards of its edge.

Jazirat al Quraiyin (Kurain), a sandy islet about 2 feet (0^m6) high, lies about $3\frac{1}{2}$ miles southward of Jazirat al Qiran ; it is fringed by a reef which is usually covered with birds.

A bank, over which there is a depth of 5 fathoms (9^m1), is reported to 50 lie about 8 miles eastward of Jazirat al Quraiyin, but its position has not been determined and, in 1857, the Indian Government vessel *Euphrates* passed over its assigned position without finding it.

There is a channel with depths of 12 fathoms (21^m9) in it, between Jazirat al Quraiyin and Jazirat al Qiran. The area southward and

Chart 748b.

Chart 2837b.

westward towards Jazirat Janā and Fasht al Kash, respectively, appears to be clear but has only been partially examined and caution is therefore necessary. (See Caution on page 213).

Coast.—Dangers.—Between Ras al Ghār (page 213) and Ras at Tanājib, about 23 miles north-westward, the coast is mostly low, with foul ground extending in places from 5 to 9 miles offshore, the bottom being chiefly white clay. Jabal al Manifa, lying on the coast about 12 miles west-north-westward of Ras al Ghār, is a small hill; about 5 miles west-north-westward of Jabal al Manifa is Dōhat Manifa, close westward of which is Dōhat Balbul, a small bay which affords anchorage to boats. Ras at Tanājib rises steeply to a flat-topped light-coloured hill, from 70 to 100 feet (21^m3 to 30^m5) high.

Dōhat al Kharais is an extensive bight entered between a point, situated about 11 miles north-westward of Ras at Tanājib, and Ras as Saffāniya, about 8 miles farther in the same direction; little is known of this bight except that its shores are low, with a few hillocks. Ras as Saffāniya is low, and the coast continues so far for the greater part to Ras al Misha'āb, about 13 miles north-north-westward. Jabal Thaluf, about 4 miles north-westward of Ras as Saffāniya (*Lat. $28^{\circ} 00' N.$, Long. $48^{\circ} 46' E.$*), has a bluff on its northern side, which rises in two steps to an elevation of about 40 feet (12^m2). Jabal 'Amādah, about $2\frac{1}{2}$ miles south-westward of Ras al Misha'āb, is a dark volcanic-looking hill, 105 feet (32^m0) high, which appears from north-eastward as four hummocks (see view Q on chart 2837b). Ras al Misha'āb is low and sandy but is faced, in places, with low cliffs.

A detached shoal patch lies about $2\frac{1}{2}$ miles offshore, $4\frac{1}{2}$ miles south-eastward of Jabal 'Amādah.

Jazirat al Maqta' (Makta), an islet lying close southward of Ras al Misha'āb, has cliffs from 20 to 30 feet (6^m1 to 9^m1) high on its eastern side and is covered with grass and brushwood. There is no channel between the islet and the mainland, and a sandy spit, on which there are several sand banks which dry, extends about $2\frac{1}{2}$ miles eastward from the former.

Kasr Umm as Sahāl, a patch which almost dries, lies near the edge of the coastal reef which extends about 4 miles north-north-eastward from Jazirat al Maqta' and over which there are general depths of about 2 fathoms (3^m7); there are depths of 9 fathoms (16^m5) close to this shoal.

Anchorage.—Bandar Misha'āb is an anchorage, where native craft shelter from the shaimāl, on the southern side of the spit extending eastward from the coast in the vicinity of Jazirat al Maqta'; the anchorage is in the north-eastern part of a large bay which is in most places shallow; the approach to the anchorage, in which there are depths of from 6 to 7 fathoms (11^m0 to 12^m8), is between the spit mentioned above and Kassār al Mitma, (see below). The best position in which to anchor is about $1\frac{1}{2}$ miles south-eastward of the north-eastern extremity of Jazirat al Maqta'.

Off-lying dangers.—Bildāni reefs extend about 16 miles offshore between Ras at Tanājib and Ras al Misha'āb. Ras Bildāni, the south-eastern extremity of the reefs, lies about 17 miles north-eastward of Ras at Tanājib, and from it the edge of the reef, which appears to be continuous, trends about 25 miles north-westward, and then trends about 7 miles south-westward to Kassār al Mitma, on the eastern

Chart 748b.

Chart 2837b.

side of the approach to the anchorage off Jazirat al Maqta'. Parts of the reef are above water, and others dry ; there are depths of 10 fathoms (18^m3) about half a mile outside the reefs. A channel leads along the coast inshore of Bildāni reefs from the southern part of the bay in which the anchorage off Jazirat al Maqta' is situated ; it has not been examined, but is reported by the Arabs to be navigable.

A detached patch, with a depth of 2½ fathoms (4^m1), sand and rock, and steep-to, lies about 10 miles north-north-westward of Ras Bildāni ; 10 the water is slightly discoloured over the shoal.

Bildāni reefs should not be approached at night into depths of less than 18 fathoms (32^m9), nor by day, when in clear weather they can be seen at a distance of about 3 miles, into less than 15 fathoms (27^m4) ; the land is not in sight from seaward of the reef.

15 The 2½-fathom (4^m1) patch should be given a wide berth.

Anchorage, sheltered from the shamāl but open to the kaus, might be obtained under the lee of the reefs between Ras Bildāni and Ras at Tanājib (*Lat.* 27° 50' N., *Long.* 48° 58' E.), with the hill on the latter bearing 280°, distant about 8 miles.

20 **COAST OF KUWAIT.**—The coast proper of the Principality of Kuwait extends from a position about 2 miles southward of Ras al Qailiya, situated about 45 miles north-north-westward of Ras al Misha'āb, to the junction of Khōr as Sabiya (page 224), and Khōr Shetana, but that part between a position about midway between 25 Ras al Misha'āb and Ras al Khafji, about 13 miles north-north-westward and the boundary of Kuwait proper is jointly owned by the Sultan of Kuwait and the King of Nejd and is known as the neutral zone.

Between Ras al Misha'āb and Kita at Araifiyan, situated about 30 4 miles offshore, 52 miles north-north-westward, the coast may be approached to a distance of about 6 miles, and between Kita at Araifiyan and Ras al Ardī, on the western side of the entrance of Kuwait harbour, about 23 miles farther north-north-westward, it may be approached to a distance of about 2 miles. There are several off-lying islets, within which the depths are irregular and soundings afford but little guidance ; off the northern part of the coast of the Sultanate is an extensive flat (*see* page 219). In depths of less than 8 fathoms (14^m6), the bottom is of sand or rock, but in greater depths it is of mud. Between Ras al Misha'āb and Kuwait harbour, there is 40 no place of shelter from the shamāl for any but very small boats ; this wind, which on this coast blows from north-north-westward, and occasionally from northward, raises a considerable sea.

The tidal streams set north-north-westward and south-south-eastward along the coast, and are strong.

45 The coast between Ras al Misha'āb and Ras al Khafji consists of low sand hills. About 11 miles north-north-westward of Ras al Misha'āb is Dōhat al Asli, a shallow bay. Ras al Khafji is a sandy point, off the northern side of which there is an islet ; the coastal reef extends about one mile from the point. About 5 miles north-north-westward of Ras al Khafji is Ras Bard Halq (Bardhalk), a low, white and sandy point, from which a spit extends about one mile north-eastward. About 4½ miles farther north-westward is Hadd al Hamāra, a small sandy spit, under the lee of which boats may obtain shelter.

Chart 748b.

Chart 2837b.

Jabal Banna, about 10 miles north-westward of Ras Bard Halq and about 2 miles inland, rises to an elevation of from 70 to 100 feet (21^m3 to 30^m6) ; it is small, saddle-shaped and dark in colour ; the coast in the vicinity consists of low white sand hills. (See view R on chart 2837b). 5 About 2 miles northward of Jabal Banna is Khōr al A'ma (Ami), a small inlet frequented by fishing boats, and about 5 miles farther northward is Ras az Zaur (Zor), the extremity of a low sandy projection, from which a spit extends about 2 miles north-eastward.

Off-lying dangers and banks.—Beacon.—Al Kumrah is a 10 pearl bank, with a least depth of 8 fathoms (14^m6), lying about 18 miles north-eastward of Ras al Misha'ab (*Lat. $28^{\circ} 12' N.$, Long. $48^{\circ} 39' E.$*). Breakers were reported, in 1908, to lie about 12 miles east-north-eastward of Ras al Khafji. Umm al Marādim, about 14 miles east-south-eastward of Ras az Zaur, is a sandy islet, about 20 feet (6^m1) 15 high, covered with brushwood, and steep-to at the edge of its fringing reef, which, except on its southern side, extends nearly half a mile off it. A stone beacon, about 10 feet (3^m0) in height, stands on the north-eastern part of the islet. A small reef, awash and steep-to, lies about 2 miles north-north-westward of Umm al Marādim. 20

Chart 1265.

Coast.—Dangers.—Light.—Dōhat az Zaur, entered between Ras az Zaur and Ras al Qaliya (Kaliyah), is encumbered with shoal patches, some of which lie 4 miles offshore.

Ras al Qaliya is low, and from it a spit, with depths of 2 fathoms (3^m7), extends about 4 miles north-eastward. Kita at Araifiyan, about 7 miles north-north-westward of Ras al Qaliya and 4 miles offshore, is a small detached reef, nearly awash, and steep-to.

Between Ras al Qaliya and Ras al Ardh the coast is a low stony desert, brownish in colour ; a few miles inland are hills from 200 to 300 feet (61^m0 to 91^m4) high. About 3 miles north-westward of Ras Qaliya is a square hillock, which in appearance resembles a fort and rises to an elevation of about 50 feet (15^m2) ; it is known as Jilaat al Abid, and on it are the ruins of an old tower ; along the coast northward of this hillock are four forts or villages, the whole being 35 known as Al Qasur.

Chart 22.

Ash Shu'aiba (Shi'aibah), the southernmost of the four, and situated about $12\frac{1}{2}$ miles north-westward of Ras Qaliya, is a small square fort standing on the coast. The beach in its vicinity is sandy, but at low 40 water the landing is indifferent ; near the fort is a date plantation. About $2\frac{1}{2}$ miles northward of Ash Shu'aiba is Fahaihl (Fahaheel) village, and about the same distance farther northward is Abu Hulaifa (Halaifa), a small fort, near which are a few date palms. Fantās, the northernmost of the four villages, is situated about $2\frac{1}{2}$ miles northward 45 of Abu Hulaifa, and has a small date grove.

About $3\frac{1}{2}$ miles north-north-westward of Fantās there is a conspicuous tree standing about half a mile inland. Sirrah hill fort, about 5 miles south-westward of Ras al Ardh, is a small square and conspicuous structure, standing at an elevation of about 180 feet (54^m9). 50

A small patch, over which there is a depth of $1\frac{1}{2}$ fathoms (2^m3), rock, lies about three-quarters of a mile offshore, $7\frac{1}{2}$ miles southward of Ras al Ardh. Kola patch, with a depth of 6 feet (1^m8) and steep-to, is a small rock lying about 8 cables offshore and $3\frac{1}{2}$ miles southward of Ras al Ardh. 55

Charts 2837b, 748b.

Chart 22.

A shoal, over which there is a least depth of 2 fathoms ($3^{\text{m}}7$), lies about 6 cables offshore and about 2 miles southward of Ras al Ardh.

Ras al Ardh, the southern entrance point of Kuwait harbour, is 5 low and sandy; it is reported to have extended considerably since the first survey of 1821-9; a bank, with depths of 2 fathoms ($3^{\text{m}}7$), extends about 2 cables north-eastward from it. During a kaus, a very heavy sea breaks on the point. At springs, the tidal streams off the point are strong.

10 A light is exhibited, at an elevation of 36 feet ($11^{\text{m}}0$), from a stone pyramidal beacon, painted black, on the extremity of Ras al Ardh (*Lat. $29^{\circ} 21' \text{N.}$, Long. $48^{\circ} 06' \text{E.}$*).

Chart 1265.

Outlying dangers.—Beacon.—Tidal streams.—Jazirat Qārū
15 (Karu), 26 miles east-south-eastward of Ras al Qaliya, is a sandy islet, about 3 feet ($0^{\text{m}}9$) high, on which are some tufts of grass. A spit extends about half a mile northward from the islet. Birds frequent the islet in large numbers, and, during the season, it is covered with their eggs and young.

20 A small, detached, steep-to reef, on which the sea breaks at low water, lies about $1\frac{1}{2}$ miles north-north-westward of Jazirat Qārū. The depths in the vicinity of the islet and of the reef are no guide to their proximity, and they should be carefully avoided at night.

Madaira reef consists of two coral patches about $8\frac{1}{2}$ cables apart, 25 lying about $6\frac{1}{2}$ miles north-north-eastward of Jazirat Qārū; there is a depth of 3 feet ($0^{\text{m}}9$) over the south-eastern patch, and 5 feet ($1^{\text{m}}5$) over the north-western one, and they are steep-to. In fine weather the presence of the reef is only indicated by slight overfalls in its immediate vicinity, though in bad weather it probably breaks.

30 Taylor rock, about $17\frac{1}{2}$ miles east-north-eastward of Ras al Qaliya, is a small coral patch, with a depth of 9 feet ($2^{\text{m}}7$); in fine weather there is no indication on the surface of its presence, but in bad weather it probably breaks.

Chart 22.

35 Jazirat al Kubr (Kubbar), about $15\frac{1}{2}$ miles north-eastward of Ras al Qaliya, is a sandy islet, about 8 feet ($2^{\text{m}}4$) high, overgrown with brushwood; a reef extends $1\frac{1}{2}$ cables southward, 3 cables eastward, and one cable northward from the islet, and a narrow rocky tongue, on which the sea breaks in bad weather, extends about 6 cables north-westward from it. A detached $1\frac{1}{2}$ -fathom ($2^{\text{m}}7$) patch lies about 6 cables westward of the islet. A stone beacon, 15 feet ($4^{\text{m}}6$) high, surmounted by a barrel, stands on the northern side of the islet.

An anchorage may be obtained, in a depth of 11 fathoms ($20^{\text{m}}1$), about half a mile south-south-eastward of Jazirat Kubr, but the islet does 45 not afford shelter from the shamāl. In fine weather, landing on the south-western side of the islet is good.

The tidal streams in the vicinity of the foregoing dangers set north-westward and south-eastward, and at springs attain a rate of about $1\frac{1}{2}$ knots.

60 Charts 22, 1265.

KUWAIT AND APPROACHES.—Dangers.—Beacon.—The fairway in the approach to Kuwait harbour lies between the coast southward of Ras al Ardh and Abu Jezza, an extensive flat which

Charts 1265, 2837b, 748b.

Charts 22, 1265.

extends from 35 to 40 miles south-eastward from the coast north-eastward of the entrance of the harbour. Over the south-eastern end of this flat there are depths of from 6 to 9 fathoms (11^m0 to 16^m5), but there are depths of less than 6 fathoms (11^m0) within 33 miles of the coast. 5

Chart 22.

Jazirat Failaka lies on an extensive flat of mud, sand, and rock on the eastern side of the approach with its western extremity about 10 miles north-eastward of Ras al Ardh (*Lat.* $29^{\circ} 21' N.$, *Long.* $48^{\circ} 06' E.$) ; 10 it is very low, but there is a clump of date palms on its south-western side about 2 miles from its south-eastern end. The highest part of the island is a small mound, about 30 feet (9^m1) high, on the south-western side, about half a mile eastward of its western extremity, and on which there is a small but conspicuous tomb. Az Zaur (Zor) is a 15 village, the only inhabited part of the island, near the middle of its north-western side ; near the village is a small date grove. Native boats anchor on the flat off the tomb, and shift round the point on which it stands according to the direction of the wind. The island is healthy. Off the north-western side of the island there are depths of 20 from 2 to 6 feet (0^m6 to 1^m8), and there is good landing for boats at all states of the tide, especially at Az Zaur.

Jazirat Auha, a sandy islet covered with scrub, about 8 feet (2^m4) high, lies about 2 miles south-eastward of the south-eastern extremity of Jazirat Failaka. There are three cairns on the islet, the north-western and south-eastern being about 8 feet (1^m8) in height, and the middle one smaller. A black beacon, surmounted by a ball, 40 feet (12^m2) in height, stands near the centre of the islet. 25

Ras al Yahi, a rocky patch which dries 2 feet (0^m6), extends half a mile north-eastward from a position about $1\frac{1}{2}$ miles east-north-eastward 30 from Jazirat Auha ; it lies on the eastern extremity of the flat surrounding Jazirat Failaka. Soundings give no warning of its proximity when approaching from northward or eastward and caution is therefore necessary in its locality. The depths are shoal between Jazirat Auha and Ras al Yahi and also between them and Jazirat Failaka. 35

Dhārub (Tharub) is an extensive mud flat extending south-eastward from the entrance of Khōr as Sabiya (page 224).

Mashjang, a sandy islet about 10 feet (3^m0) high, lies on Dhārub flat about $1\frac{1}{2}$ miles north-westward of the north-western extremity of Jazirat Failaka. 40

Kuwait harbour.—Shoals.—Lights.—This harbour is situated in a bay, between Ras al Ardh and a point 12 miles north-north-eastward ; its southern shore is indented by three bights, in which the depths are for the most part very shallow. The northern shore is low and is fringed by a mud flat, with depths of less than 3 fathoms (5^m5), extending as much as 5 miles from the eastern part. North-westward of the bay is the Aghthi country, the hills of which are probably from 200 to 300 feet (61^m0 to 91^m4) high, and are dusky brown in colour, with a level summit ending abruptly on its seaward side in cliffs. The whole of the surrounding country is elsewhere a 45 desert of white sand. 50

The shamāl raises a considerable sea in the southern part of the bay, but insufficient to distress a large vessel, though a heavy swell gets up quickly, making boatwork very difficult. The kaus also

Charts 2837b, 748b.

Chart 22.

causes a swell in the harbour, much greater than would be expected from the strength of the wind.

The bight between Ras al Ardh and Ras 'Ajūza, about $5\frac{1}{2}$ miles west-north-westward, is almost filled with a bank, with depths of less than 3 fathoms (5^m5), the outer edge of which lies about 6 cables outside the line joining those points ; there is, however, a narrow channel, in which the depths are from 7 to 11 fathoms (12^m8 to 20^m1), running in close to the shore westward of Ras al Ardh. A patch, over which there is a depth of only 3 feet (0^m9), lies near the end of the bank westward of the entrance of this narrow channel, in a position about 8 cables north-westward of Ras al Ardh (*Lat. 29° 21' N., Long. 48° 06' E.*).

Lights are occasionally exhibited, at an elevation of 163 feet (49^m7), from a derrick on the northern side of the harbour, $12\frac{1}{2}$ miles northward of Ras 'Ajūza.

Charts 1213, 22.

Port of Kuwait.—Dangers.—Buoys.—Lights.—The port of Kuwait is in the eastern part of the large bight on the southern side of the harbour entered between Ras 'Ajūza and Ras 'Ashairiq (Ashairij), about 12 feet (3^m7) high, lying about 8 miles westward. Dōhat Abu Tala, the head of this bight, is filled with extensive sand and mud flats which dry. The town of Kuwait stands on the eastern shore of the bight close south-westward of Ras 'Ajūza.

Chart 1213.

Ras 'Ajūza is low, and from it a rocky flat, which dries about 6 feet (1^m8), and has fish weirs on it, extends about $3\frac{1}{2}$ cables northward ; a bank, with depths of less than 3 fathoms (5^m5), extends about 11 cables northward from this flat, terminating in a spit, over which there is a depth of $2\frac{1}{2}$ fathoms (5^m0). A black can buoy, surmounted by a globe, is moored about $1\frac{1}{2}$ cables north-north-eastward of the spit, about $1\frac{1}{2}$ miles northward of Ras 'Ajūza. A shoal, with a depth of $3\frac{1}{2}$ fathoms (5^m9), lies about $5\frac{1}{2}$ cables east-north-eastward of the $2\frac{1}{2}$ -fathom (5^m0) shoal.

A light is exhibited, at an elevation of 50 feet (15^m2), from the Shaikh's house, situated about $3\frac{1}{2}$ cables west-south-westward of the extremity of Ras 'Ajūza.

A light is exhibited, at an elevation of 45 feet (13^m7), from the roof of the British Residency, about half a mile westward of Ras 'Ajūza. Fasht al Hadiba (Hadaibah), on the western side of the approach to Kuwait, is a rocky patch, over which there is a depth of $1\frac{1}{2}$ fathoms (3^m2), lying about $2\frac{1}{2}$ miles north-westward of Ras 'Ajūza ; it lies at the north-eastern end of a shallow spit extending about 3 miles from the north-eastern part of Al 'Akāz.

A red conical buoy is moored on the eastern side of Fasht al Hadiba ; vessels with a draught of more than 10 feet (3^m0) should not pass over any part of the reef westward of this buoy.

A conical buoy, painted in black and white bands, marks the anchorage off Kuwait in a position about $1\frac{1}{2}$ miles north-westward of the British Residency.

Al 'Akāz is an extensive reef lying about $1\frac{1}{2}$ miles westward of the southern part of Kuwait town ; its southern part dries, and over its northern part the depths generally are about 2 feet (0^m8), though there are some rocky patches which dry from one to 3 feet (0^m3 to 0^m9).

Charts 22, 1265, 2837b, 748b.

Chart 1213.

Jazirat Qurain (Kurein) is an inconspicuous barren islet on the southern side of Al 'Akāz, with a peak, 30 feet (9^m1) high, at its southern extremity.

For a distance of about 8 cables off the frontage of Kuwait town there are depths of less than 2 fathoms (3^m7), and the beach dries out for a considerable distance, though at high water the sea washes up to the houses ; the native boats are hauled up on the beach inside substantial breakwaters constructed of loose stones. A short distance south-westward of the town there are some white sand hills.

A light (*Lat. 29° 23' N., Long. 47° 59' E.*) is occasionally exhibited, at an elevation of 45 feet (13^m7), from a pedestal on the eastern extremity of a building near the sea front, close westward of the Shaikh's palace. See page 222.

Bandar ash Shuwaik is a small area, in which there are depths of from 2 to $6\frac{1}{2}$ fathoms (3^m7 to 12^m3), mud, about $2\frac{1}{2}$ miles south-westward of the Shaikh's palace. It is used by native craft, and the channel leading to it, which is about 300 feet (91^m4) wide, is marked on its eastern side by five red drums and on its western side by five white drums. The southern end of the channel is marked by No. 6 red can and No. 6 white can buoys moored about $3\frac{1}{4}$ and $5\frac{1}{2}$ cables north-north-eastward, respectively, of the Shaikh's coal shed, which stands on the mainland about $1\frac{1}{2}$ miles eastward of the southern extremity of Jazirat Qurain.

Two mooring buoys lie off the head of a stone pier, which has a depth of less than one foot (0^m3) at its head, close north-eastward of the Shaikh's coal shed.

Anchorages.—A vessel may obtain anchorage, in depths of from $3\frac{1}{2}$ to $5\frac{1}{2}$ fathoms (5^m9 to 10^m1), southward of Fasht al Hadiba ; the farther westward that a vessel can anchor in this vicinity, the better shelter she will obtain.

A vessel requiring greater depths should anchor west-north-westward of Fasht al Hadiba, in from 7 to 9 fathoms (12^m8 to 16^m5), but at this anchorage there is little shelter from the *kaus*.

Anchorage may also be obtained by a vessel of suitable draught, in Bandar ash Shuwaik with the Shaikh's coal shed, bearing 204° , distant about 4 cables. Al 'Akāz, north-westward of this anchorage and the shoals northward and north-eastward of it, afford little or no protection, and winds from west-north-west, through north, to north-east raise a breaking sea which makes boatwork dangerous. The holding ground is, however, exceptionally good, and on two occasions in 1928, H.M.S. *Lupin* rode out a heavy *shamāl* in this anchorage. Except with winds from the above-mentioned directions, the landing facilities are very good on the beach in the vicinity. A sloping hardway extends from the Shaikh's coal shed.

Landing at Kuwait may be effected in any of the well sheltered cämbers formed by the numerous breakwaters ; but they all dry from 2 to 3 feet (0^m6 to 0^m9) at springs.

Anchorage may also be obtained in Dōhat Kādhima, see page 223. Charts 1213, 22, 1265.

Directions.—Tidal streams.—A vessel approaching Kuwait harbour from south-eastward should steer to pass about 10 miles north-eastward of Madaira reef and continue to steer north-westward for about 8 miles into a depth of 10 fathoms (18^m3) ; thence she should

Charts 1213, 22, 1265.

alter course westward and steer along the southern edge of Abu Jezza flat, keeping in depths between 8 and 10 fathoms ($14^{\text{m}6}$ and $18^{\text{m}3}$). In clear weather, she should sight Jazirat al Kubr, and pass about 6 miles northward of it, thence she should steer for Sirra hill fort until within about 4 miles from the coast, when she should steer to pass about $1\frac{1}{2}$ miles eastward of Ras al Ardh. Caution should be exercised as there is usually an indraught towards this part of the coast. In hazy weather, it might be well to continue to close the coast until 10 it is sighted, for it may be approached in safety to a distance of $1\frac{1}{2}$ miles.

A vessel approaching from eastward should steer for a position on Abu Jezza flat and thence westward, being guided by soundings. The clump of date palms on the south-western side of Jazira Failaka might be visible at a distance of about 9 miles southward.

15 From a position about $1\frac{1}{2}$ miles north-eastward of Ras al Ardh (*Lat. $29^{\circ} 21' N.$, Long. $48^{\circ} 06' E.$*), a vessel should steer for a position about one mile east-north-eastward of the buoy off the extremity of the spit northward of Ras 'Ajūza; thence she should alter course gradually south-westward and pass between that buoy and the buoy 20 marking the eastern side of Fasht al Hadiba, and thence to the anchorage.

A vessel bound for Bandar ash Shuwaik should, after passing between the two buoys, steer for the summit of Jazirat Qurain, bearing 227° until an iron column surmounted by a triangle, situated 25 about half a mile north-eastward of the Shaikh's coal shed, is in line with a large rectangular stone, about 11 feet ($3^{\text{m}}4$) high, bearing 196° ; she should then steer with these marks in line, which leads through the buoied channel, in which, in 1939, a depth of 11 feet ($3^{\text{m}}4$) could be carried into the basin. In 1933, H.M.S. *Fowey* reported that these 30 leading marks were not conspicuous.

When a thin pole beacon, situated about 9 cables north-eastward of the iron column mentioned above, bears 096° , she should alter course for the anchorage. Care should be taken not to get westward of the leading line as there is a spit with a depth of 7 feet ($2^{\text{m}}1$) close 35 westward of it, situated about $16\frac{1}{2}$ cables from the front mark.

The tidal streams in the entrance of the harbour, eastward of Fasht al Hadiba, set about east-north-eastward and west-south-westward and at springs attain a rate of from 2 to 3 knots. In Bandar ash Shuwaik, the tidal streams set fairly through the channel.

Chart 1213.

Kuwait town.—This town, the capital of the Principality of Kuwait, is one of the most important in the Persian gulf; it is built on a considerable slope, the houses behind being about 50 feet ($15^{\text{m}}2$) above those on the sea front. It is surrounded, on its landward side, 45 by a wall in which are a number of towers and several gates. The houses are mostly of stone and sun-dried bricks, though there is a large suburb of mat huts, outside the town proper.

The Shaikh's palace, about $1\frac{1}{2}$ miles south-westward of the British Residency, has a small roof, which is the highest point of any building 50 in the town; there is a flagstaff in front of the town. The Shaikh's house near Ras 'Ajūza and the two houses about 2 and $6\frac{1}{2}$ cables, respectively, westward of it, are conspicuous.

Trade.—The principal export is pearls; the chief imports are rice, sugar, tea, flour, piece goods, matches, hardware, wheat and barley..

Charts 22, 1265, 2837b, 748b.

Chart 1213.

Harbour facilities.—Sheep can be procured; vegetables are scarce.

There is a hospital south-westward of the town. Europeans can be admitted in an emergency.

A British Political Agent is stationed at Kuwait.

Communication.—There is steamer communication with other ports in the Persian gulf.

Kuwait is connected to the general telegraph system.

Chart 1214.

Döhat Kädhima.—**Reefs.**—**Beacon.**—Döhat Kädhima (Kädhamma) is that portion of Kuwait harbour lying westward of Ras 'Ashairiq (*Lat.* 29° 23' N., *Long.* 47° 51' E.). The shores of the bay are low, sandy, and covered with scrub. The southern shore is fringed by rocky or sandy shoals, on which are many fish traps, to a distance of about 1½ miles offshore.

Jazrat Umm an Namal, close eastward of Ras 'Ashairiq, is rocky and about 10 feet (3^m0) high. A beacon, surmounted by a triangle, 51 feet (15^m5) high, stands on the southern side of the island. There is a conspicuous building about 2 cables north-north-eastward of the beacon, but, in 1933, H.M.S. *Fowey* reported that it was not visible from the anchorage off Kuwait in clear weather, at a distance of about 5½ miles.

Kita 'atain Ushairij, about 1½ miles north-north-westward of Ras 'Ashairiq, is a small rock with a depth of 1½ fathoms (2^m3). Kutat Abu Taleh, about three-quarters of a mile south-westward of Kita 'atain Ushairij, is a small reef nearly awash; small 3- and 5-foot (0^m9 and 1^m6) patches lie, respectively, about half a mile and 1½ miles south-westward of Kutat Abu Taleh.

All the above-mentioned shoals lie close to or adjacent to the coastal bank, on the southern side of the harbour.

Ras al Kädhima (Kädhamma), on the northern shore of Kuwait harbour about 5½ miles west-north-westward of Ras 'Ashairiq, is swampy and only just above water at high tide. About half a mile inland from the north-western shore of Döhat Kädhima, the ground, sandy and covered with scrub, rises gradually to the foot of a range of hills from 2½ to 3 miles inland; north-westward of the head of the harbour, these hills attain an elevation of 410 feet (125^m0).

North-eastward of Ras al Kädhima, a soft mud flat, which makes landing very difficult at low water, extends from 3 cables to over one mile offshore.

Fasht Oushair, over which the depth is less than 6 feet (1^m8), lies about 1½ miles offshore, about 5 miles north-eastward of Ras al Kädhima; with the exception of this reef, the depths on the north-western side of the bay decrease gradually towards the mud flat.

The head of Döhat Kädhima, westward of Ras al Kädhima, is shallow.

Fasht al Jathir, about 8 cables south-westward of Ras al Kädhima, dries 11 feet (3^m4); there is a boat passage on its northern side leading to the landing place.

Khwesat, about 1½ miles west-south-westward of Ras al Kädhima, is the only landing place at the head of the bay. Jahra is a village about 1½ miles south-westward of the head of the bay. There is a large white building close westward of the village.

Chart 1214.

Anchorage.—The outer part of Dôhat Kâdhima affords anchorage, in depths of from 5 to 6 fathoms ($9^{\text{m}}1$ to $11^{\text{m}}0$), for a large number of vessels; it is the only good anchorage for large vessels in the northern part of the Persian gulf, and is sheltered from the shamâl. To reach the anchorage, however, a bank, which extends across the bay and over which the depths are from $4\frac{1}{2}$ to 5 fathoms ($7^{\text{m}}8$ to $9^{\text{m}}1$), must be crossed..

Chart 1265.

10 KUWAIT HARBOUR TO SHATT AL 'ARAB.—Dangers.—Jazirat Bûbiyân, a low barren island, partly covered at high water, lies with Ras al Buraisha (*Lat. $29^{\circ} 34' N.$, Long. $48^{\circ} 13' E.$*), its southern extremity, about 7 miles north-westward of the north-western point of Jazirat Failaka; it is separated from the mainland on its western and northern sides by Khôr as Sabîya, and on its eastern side by Khôr 'Abdullah.

The southern approach to Khôr as Sabîya over Dhârub flat is encumbered with numerous rocks and dry patches, and is only accessible to boats when the tide is above mean sea level. Sabîya, on the western side of the entrance to Khôr as Sabîya, is a ruined mud enclosure surrounded by tamarisks.

The flat of mud, sand, and rocks which connects Jazirat Failaka to the mainland continues north-eastward as a mud flat extending about 3 miles from the south-eastern side of Jazirat Bûbiyân. Ras al Qaid, about 15 miles north-eastward of Ras al Buraisha, is the eastern extremity of Jazirat Bûbiyân, near which there is a conspicuous old fort.

Charts 1235, 1265.

The entrance to Khôr 'Abdullah lies between Ras al Qaid and Marraqqat 'Abdullah, an extensive bank which dries in patches (see page 239), about 10 miles north-eastward. Both shores of the khôr are low alluvial land, covered in places with reeds and grass, and with shallow flats extending a considerable distance from them.

Fasht al Aik, about $6\frac{1}{2}$ miles east-south-eastward of Ras al Qaid, is a detached bank of hard sand, with a depth of 3 feet ($0^{\text{m}}9$), lying near and within the north-western end of a bank with depths of less than 3 fathoms ($5^{\text{m}}5$), which extends about $4\frac{1}{2}$ miles south-eastward from it. Several detached shoals, with depths of from $2\frac{1}{2}$ to 3 fathoms ($5^{\text{m}}0$ to $5^{\text{m}}5$), lie within 3 miles north-eastward and $5\frac{1}{2}$ miles east-south-eastward of Fasht al Aik. Shoals, which dry in places lie between Fasht al Aik and Ras al Qaid. Khôr al Qaid is a channel, with a least depth of 9 feet ($2^{\text{m}}7$), leading north-westward between these shoals and Ras al Qaid.

Chart 1265.

Jazirat Warba, mostly low, flat, and covered with reeds and coarse grass, lies northward of Jazirat Bûbiyân, and is separated from it by the northern end of Khôr as Sabîya. On its northern and north-western sides, respectively, it is separated from the mainland by Khôr Shetana and Khôr Sakaa. A sand spit, over which there are depths of from one to 6 feet ($0^{\text{m}}8$ to $1^{\text{m}}8$), extends nearly $1\frac{1}{2}$ miles eastward from the island, and a detached 3-fathom ($5^{\text{m}}5$) patch lies in mid-channel about 2 miles south-eastward of the extremity of the spit.

Charts 2837b, 748b.

Chart 1265.

Khōr Umm Qasr extends about 4 miles north-westward from Khōr Sakaa to Umm Qasr fort, on its western bank, above which it is apparently known as Khōr Zobeir.

Charts 1235, 1265.

Anchorage.—Directions.—Anchorage may be obtained by vessels with local knowledge anywhere in Khōr 'Abdullah above Ras al Qaid (*Lat. 29° 47' N., Long. 46° 22' E.*) according to draught, but it is not advisable to anchor below that point.

Anchorage may also be obtained in Khōr Umm Qasr, about 2 miles 10 below the fort, but abreast the latter there is very little room.

Considerable difficulty may be experienced in fixing the position of the vessel in the approach to, and in, Khōr 'Abdullah; the following objects are available but can only be identified in the clearest weather; the Old semaphore (page 235); the conspicuous fort, on the eastern 15 side of Jazirat Bübiyān, near Ras al Qaid; and Fao flagstaff (page 242), which last is not readily identified though its position is indicated by a clump of dark trees conspicuous in the line of date palms.

The navigable channel in Khōr 'Abdullah passes between Maraqqat 'Abdullah, and the shoals extending from it and the coast farther 20 north-westward, on the north-eastern side, and Fasht al Aik, with the shoals lying off it, and the flats extending from Jazirat Bübiyān, on the south-western side. Depths of from $3\frac{1}{2}$ to 4 fathoms (5^m9 to 7^m3) can be carried to about $3\frac{1}{2}$ miles below Jazirat Warba, thence 3^m fathoms (6^m4) can be carried to the channels on either side of that 25 island, but the southern one is not recommended. A depth of 15 feet (4^m6) can apparently be carried through Khōr Shetana and Khōr Umm Qasr as far as the fort on the western side of the latter.

From 3 days' observations, taken in September, 1924, it would appear that, at the northern end of Khōr 'Abdullah, the out-going 30 tidal stream attains a rate of about 3 knots.

Charts 2837b, 748b.

CHAPTER VIII

HEAD OF THE PERSIAN GULF—COASTS OF PERSIA AND 'IRAQ—RAS ASH SHATT TO, AND INCLUDING, SHATT AL 'ARAB ; AND THE TIGRIS AND EUPHRATES.

Chart 2837b.

GENERAL REMARKS.—Aspect.—Between Ras ash Shatt (page 153) and Ras Bahrgān (*Lat. 30° 01' N., Long. 49° 35' E.*), about 80 miles north-westward, there are no off-lying dangers, but the coastal bank, with depths of less than 3 fathoms (5^m5), extends from one to 8 miles offshore. The only islands off this coast are Jazirat Khārg and Jazirat Khārgū, situated about 19 and 21 miles, respectively, north-westward of Ras ash Shatt. The towns on this coast are small.

The coast generally is low and the mountains, with the exception of Kuh-i-Bang, lie at some distance inland. This mountain, which is about 1,000 feet (304^m8) high, is situated about 42 miles north-north-westward of Ras ash Shatt; its summit lies about 2 miles inland and its seaward face is precipitous; from southward it appears as a conspicuous bluff (see view M on chart 2837b and view facing page 229).

15 The range, of which Kuh-i-Bang is a part, extends, parallel with the coast, for a distance of about 12 miles.

About 27 miles eastward of the lighthouse at Bushire there is a mountain ridge, about 4,000 feet (1219^m2) high, which has summits at either end and near its centre, and the crest of which is deeply serrated.

20 Gisakān bluff, about 5,350 feet (1630^m7) high, is situated about 22 miles northward of the central summit of this ridge and rises at the northern end of a range in the crest of which there is a step. (See view on chart 27 and view K on chart 2837b). The land between this range and the coast appears to be low.

25 A series of ranges, lying from 30 to 40 miles inland, extends northward from Gisakān bluff; rising behind them can be seen the summits of much higher mountains, which latter are covered in winter with snow.

Kuh Tasak, a round-topped mountain, the summit of which is capped with snow in winter, rises to an elevation of about 10,200 feet (3109^m0), about 41 miles north-eastward of Gisakān bluff.

Separated from Kuh-i-Bang by a valley is a range, about 15 miles inland, which rises to heights of from 2,000 to 3,000 feet (609^m6 to 914^m4), but has no conspicuous peak; its southern end is situated about 26 miles north-eastward of Ras ash Shatt.

Chart 748b.

Chart 2837b.

A range of hills, lower than the above, trends west-north-westward to a position about 4 miles northward of the head of Dōhat Dilām, situated about 25 miles north-eastward of Ras Bahrgān, whence it turns north-westward into the interior and decreases in height ; this range is the westernmost of the Persian hills, the whole of the head of the gulf being a low alluvial plain. Rising from this range, about 26 miles north-eastward of Kūh-i-Bang, is a sharp peak, 44 miles north-westward of which is Kūh-i-Mishun (Funnel hill), 550 feet (167^m6) high. 5

Bebbehān kūh, about 26 miles north-eastward of the sharp peak mentioned above, is a great mountain mass of irregular outline lying in an easterly and westerly direction ; its summit, at an altitude of 10,400 feet (3169^m9), is snow-clad for six months of the year. 10

Tidal streams.—Southward of Dōhat Dilām, the tidal streams set northward and southward along the coast ; from the head of the bight to Ras Bahrgān (*Lat. 30° 01' N., Long. 49° 35' E.*) they set south-westward and north-eastward. The rate is from one to 1½ knots, increasing to from 2 to 3 knots as the mouths of the rivers are approached. 15

Local weather.—See pages 32-37. 20

COAST.—Between Ras ash Shatt and Khōr Hilleh Rūd, about 5 miles northward, the coast is low and sandy with tufts of grass in places. The Hilleh Rūd is formed by the junction of the Shāpūr and Dālaki rivers, about 30 miles inland ; the Hilleh Rūd floods regularly after the melting of the snow in the mountains. The river is navigable by small craft to Hilleh Rūd village, situated near a clump of date trees about 6 miles north-eastward of its mouth. The entrance of the river is shallow, and the banks cover at high water. 25

There are several other inlets on this part of the coast ; their entrances are all shallow, but they have greater depths inside. 30

Chart 2837b, plan of Kharg and Khārgu.

Off-lying islands.—**Dangers.**—Jazīrat Khārg is 284 feet (86^m6) high near its centre, near which there is a small tomb. Table-topped hills extend from north to south through the island, and about 3 cables north-eastward of the summit there is another tomb, known as Deda-buun or Muhammad's Watchman ; there are several other similar tombs on the island. The hills at the southern end of the island terminate in precipitous bluffs, and on the southern point are detached table-topped hummocks. Towards the north-western extremity of the island the hills decrease in height and terminate in cliffs from 20 to 30 feet (6^m1 to 9^m1) high. Near the middle of the northern end of the island is a wedge-shaped hill, about 200 feet (61^m0) high, close northward of which stood, in 1921, a solitary date tree which was conspicuous from northward but not so from eastward ; except from northward, the hill itself is somewhat conspicuous. About 4 cables southward of the summit there was, in 1929, a conspicuous date palm ; standing entirely alone, it was then unmistakable in clear weather, though it appeared more like a beacon than a date palm. 40

The western coast of Jazīrat Khārg consists of several rocky points, between which are sandy beaches, the hills on that side ending abruptly in cliffs ; the eastern coast is sandy. On the eastern side of the island is a cultivated plain terminating in its north-eastern extremity on 45

Chart 748b.

Chart 2837b, plan of Kharg and Khārgu.

which there is a ruined fort, and near which there is a village ; on this low, sandy point are the ruins of a fort. The flagstaff standing nearly half a mile southward of the fort, is difficult to identify as it is only a few feet high, painted black, and attached to the gable end of a house. The tomb about 4 cables farther southward, is, however, conspicuous. The climate of Khārg is reported to be far less trying in hot weather than that of Bushire.

The island is fringed by a rocky reef which extends from 3 to 5 cables offshore and is steep-to. A sand spit, with depths of from $3\frac{1}{2}$ to 6 fathoms (6^m4 to 11^m0), extends about 8 cables eastward from the north-eastern point. Because of its dark brown colour, the island can seldom be seen on a dark night, though in moonlight it sometimes shows as a white streak, but not until close-to.

15 There is a small mooring buoy, situated about $3\frac{1}{2}$ cables north-eastward of the Custom house flagstaff (*Lat. $29^{\circ} 15' N.$, Long. $50^{\circ} 21' E.$*) in the fort ; but it is of little use as such, for on the south-going tidal stream there is a race over the spit and the stream attains great strength. Owing to trees in its vicinity, the Custom house

20 flagstaff is difficult to distinguish on certain bearings.

The best landing on Jazirat Khārg at low water is northward of the eastern angle of the fort, where there is a small pier ; at high water, landing can be effected anywhere on the beach inside the reef.

Jazirat Khārgū, about 2 miles northward of Jazirat Khārg, is composed of white sand with a thin covering of coarse grass ; it is very low, but, in 1909, there was a conspicuous tree standing about a mile from its southern extremity. The island is uninhabited.

Jazirat Khārgū is fringed, except at its northern end, which is steep-to, by a flat rocky reef which extends from 5 to 8 cables offshore, 30 with depths of from 6 to 10 fathoms (11^m0 to 18^m3) close outside it. From the southern part of this reef a shoal, over which there are depths of 4 and $4\frac{1}{4}$ fathoms (7^m3 and 8^m2), rock, extends about half a mile south-eastward.

The island cannot be seen at night until dangerously close-to.

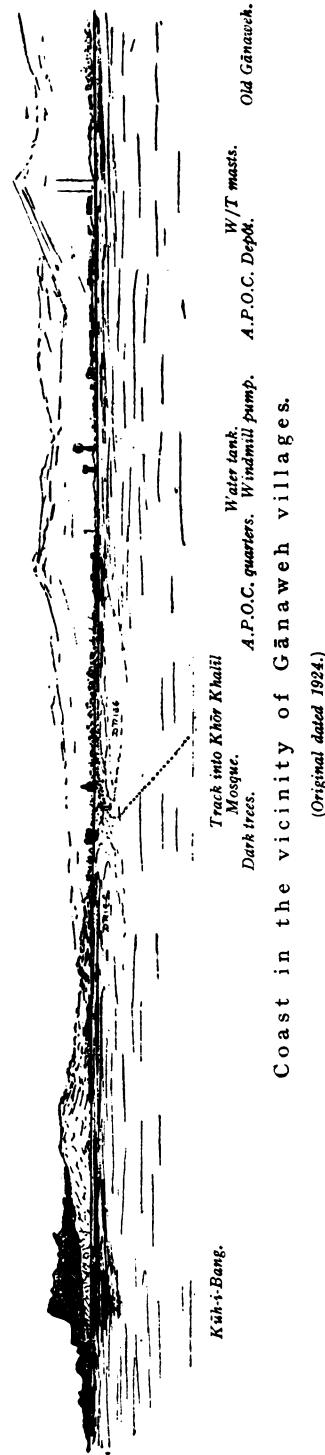
35 In the channel between the two islands, the fairway between the reefs is about one mile wide, with a least depth of 6 fathoms (11^m0), but the depths are irregular and the edges of the reefs on either side are steep-to.

The best landing on the island is at its north-eastern extremity.

40 Anchorage.—The most convenient summer anchorage, sheltered from the shamāl, is on the eastern side of Jazirat Khārg, about 4 cables offshore, in a depth of about 8 fathoms (14^m6), with the wedge-shaped hill bearing about 287° , just open southward of the ruins of the fort. In winter, vessels should anchor farther out, in a depth of about 45 10 fathoms (18^m3), so that, should a kaus come on, berth could be shifted to a position north-westward of the north-eastern point, where shelter could be obtained, in a depth of about 7 fathoms (12^m8), with the eastern angle of the fort bearing 180° , distant about 9 cables. In either position, however, the holding ground is rocky and indifferent,

50 so that, during winter, a vessel should be ready to shift berth to the opposite side of the north-eastern point, which should be effected without delay immediately the necessity for the change has become apparent.

Tidal streams.—In the vicinity of Jazirat Khārg and Jazirat



Coast in the vicinity of Gānaweh villages.

(Original dated 1924.)

Chart 2837b, plan of Kharg and Khārgū.

Khārgū, the tidal streams set north-westward and south-eastward at a rate sometimes exceeding 2 knots.

Chart 2837b.

Coast.—Anchorage.—Between Khōr Hilleh Rūd and Bandar Rig, the port and principal town of the Persian coastal sub-district of Hayāt Dāuld, about 17 miles northward, the coast continues low and sandy. Khōr-al-Qusair, about 10 miles northward of Khōr Hilleh Rūd, is frequented by large boats ; near its mouth there is a small village. At Bandar Rig there is a small creek, fronted by two sandy ¹⁰ islets, inside which native boats lie aground at low water.

In 1921, H.M.S. *Cyclamen* anchored off Bandar Rig, in a depth of $2\frac{1}{4}$ fathoms ($5^{\text{m}0}$), clay, with a white building in the centre of the town bearing 052° , distant $2\frac{1}{4}$ miles. The bottom shelves gradually towards the coast. ¹⁵

Between Bandar Rig (*Lat. $29^{\circ} 27' N.$, Long. $50^{\circ} 37' E.$*) and Ganāweh, about 8 miles north-north-westward, the coast is low and sandy.

Ganāweh.—Light.—Anchorage.—Ganāweh consists of a group of three villages situated about half a mile inland, at which there are a few date and other trees and a large tomb with a spire. Khōr Khalil is the tidal mouth of a river about $1\frac{1}{2}$ miles southward of the banyan tree ; sands, which dry, extend about 2 cables from the mouth of the river. Large dhows can enter the river at high water. ²⁰

The Anglo-Persian Oil Company has an establishment at Khōr Khalil ; the living quarters are situated south-eastward of the entrance, ²⁵ and farther south-eastward are a water tank, windmill pump, and the dépôt buildings.

The approach to Khōr Khalil is across a bar, over which there are depths of from one to 2 feet ($0^{\text{m}3}$ to $0^{\text{m}6}$), about half a mile offshore. A small spar buoy surmounted by a brush is established on the eastern ³⁰ side of the channel across the bar, and between it and the mouth of the river, that side of the channel is marked in places by slender poles. Within Khōr Khalil, the greatest depths are on the starboard hand when entering, and about 2 cables within the entrance is a concrete jetty with steps, which affords good sheltered landing at all states of ³⁵ the tide.

A light is exhibited, at an elevation of 27 feet ($8^{\text{m}2}$), at Ganāweh.

A W/T station is situated about three-quarters of a mile south-eastward of the entrance of Khōr Khalil ; the two masts, each 120 feet ($36^{\text{m}6}$) in height, are the best marks for identifying the locality. *See 40* view facing this page.

Anchorage may be obtained, in a depth of about 3 fathoms ($5^{\text{m}5}$), about $1\frac{1}{2}$ miles offshore south-westward of the banyan tree ; the holding ground, of clay and mud, is good ; large vessels anchor farther out. At low water, landing on the beach is bad, as several ridges of dry ⁴⁵ sand, with depths of about 2 feet ($0^{\text{m}6}$) inside them, must be crossed.

Between Ganāweh and Sabzpūshān, about 7 miles north-westward, the coast continues low and sandy. About 5 miles north-westward of Ganāweh is Haidari, a small village, with a few date palms in its vicinity. Sabzpūshān is a rocky point, rising steeply to hillocks ⁵⁰ from 40 to 50 feet ($12^{\text{m}2}$ to $15^{\text{m}2}$) high ; on its summit is a tomb which cannot be seen until close inshore. A rocky reef fringes the point and extends about $1\frac{1}{2}$ cables offshore ; there is a small watercourse close eastward of the point.

Chart 748b.

Chart 2837b.

Under the highest part of Kūh-i-Bang, a small tomb surmounts one of the coastal hillocks, which are about 50 feet ($15^{\text{m}}2$) high, about 7 miles north-westward of Sabzpūshān. Between Sabzpūshān and this tomb there are no reefs extending more than 2 cables offshore.

Khōr Sini, about 16 miles north-westward of Sabzpūshān, is a small inlet with a depth of about 2 feet ($0^{\text{m}}6$) in its entrance, but there are greater depths within. About $1\frac{1}{2}$ miles northward of Khōr Sini is Imām Hasan, a small village with a conspicuous mosque and some trees 10 near it. About $1\frac{1}{2}$ miles eastward of the entrance of Khōr Sini, is Asshar castle, which has four large round towers, and is conspicuous; behind the castle is the large village of Asshar (*Lat. $29^{\circ} 52' N.$, Long. $50^{\circ} 16' E.$*).

In 1922, H.M.S. *Crocus* anchored in a depth of 4 fathoms ($7^{\text{m}}3$), 15 clay, about 2 miles offshore, with Asshar castle bearing 088° , distant $3\frac{1}{2}$ miles. The holding ground was found to be excellent.

Khōr al Abd, about 4 miles north-westward of Khōr Sini, and Khōr Lailatain, about 3 miles farther in that direction, are both small. About a mile northward of Khōr Lailatain is Ras Tanb, a low sandy 20 point, from which a sand bank, which dries, extends nearly a mile, and depths of less than 3 fathoms ($5^{\text{m}}5$) some distance beyond it. The land inshore of this sandy coast is swampy for many miles.

About 8 miles eastward of Ras Tanb there is a small table-topped hill, 165 feet ($50^{\text{m}}3$) high, which is light in colour and has almost vertical 25 sides; in the plain northward of this hill there are several forts and date groves.

Dōhat Dilam.—Anchorage.—This extensive bay is entered between Ras Tanb and Ras Bahrgān, about 30 miles westward. The shore of the bay is everywhere very low.

20 Dilam, about 6 miles northward of Ras Tanb, is a small town, in which there is a large and conspicuous square fort. This fort, in and around which the houses are built, appears when first sighted from seaward as an island.

The coast in the vicinity is merely a strip of rocky land, from 10 to 35 15 feet ($3^{\text{m}}0$ to $4^{\text{m}}6$) high. Mud flats, which dry, extend offshore at Dilam, and in them there is a small creek, which dries, in which native craft lie. Landing is difficult, even at high water. The bottom is hard sand for about 3 cables offshore, and soft mud farther out.

Anchorage may be obtained, in a depth of about 4 fathoms ($7^{\text{m}}3$), 40 soft mud, about $3\frac{1}{2}$ miles offshore, or in 3 fathoms ($5^{\text{m}}5$), clay, about $2\frac{1}{2}$ miles from the town. The anchorage is sheltered from the shamāl, and the kaus does not raise the usual sea and swell, though it blows with strength.

Shāh Abū Shāh, situated on the hillocks at the head of Dōhat 45 Dilam, about 8 miles north-north-westward of Dilam, is a village in which there is a large white-domed tomb. A small creek gives access to the village.

Between Shāh Abū Shāh and Ras Bahrgān the coast may be approached in safety if soundings are taken, as the depths decrease 50 regularly. The land westward of Shāh Abū Shāh and of the hills which terminate in Kūh-i-Mishun (page 227) is very low across the head of the Persian gulf to Kuwait, about 120 miles south-westward, forming as it does the deltas of the great rivers.

Ras Bahrgān is a very low strip of sand which is nearly covered

Chart 748b.

Chart 2837b.

at high water ; inland the country is swampy for many miles and a bank, with depths of less than 3 fathoms ($5^{\text{m}}5$), extends about 6 miles southward from the point. Mud flats, which dry, extend for some miles on either side of the point ; eastward of it landing is impossible, the mud being soft for about half a mile offshore. There are two conspicuous date groves about 3 miles northward of the point. 5

Zuhreh river.—Beacon.—This river, the lower reaches of which are more commonly called Hindīān river, flows into the Persian gulf a few miles north-westward of Ras Bahrgān (*Lat. 30° 01' N., Long. 49° 35' E.*). It appears to have several mouths forming a delta but has only one main channel. The principal entrance is very shallow and has been only partially surveyed. The approach to it, through an extensive mud flat, was, prior to 1908, marked by poles surmounted by tin cans. Small native craft use the river, but a steam vessel with 15 a draught of 8 feet ($2^{\text{m}}4$) has ascended as far as the village of Hindīān. The river is very tortuous and some of the reaches approach within 2 miles of the shore of Dōhat Dilam.

Shah Mir Na' amān shrine stands on the right bank of Zuhreh river, about $6\frac{1}{2}$ miles above its mouth. 20

A beacon, situated about $3\frac{1}{2}$ miles south-westward of Ras Bahrgān, marks a channel for dhows. A wreck, situated about $3\frac{1}{2}$ miles west-north-westward of the beacon, is visible at low water.

Sirimeh, about 9 miles north-westward of Ras Bahrgān, is a clump of trees on the low shore ; it is a mark for the entrance of Zuhreh river, 25 the delta of which latter lies between these trees and the point.

*Chart 1265.***KHÔR MÜSA AND APPROACHES.—Dangers.—Buoyage.**

Khôr Müsa is a remarkable inlet entered between Ras Tanūb (at Tullub), a low point situated about 18 miles north-westward of Ras 30 Bahrgān, and Bu Sif, about 19 miles west-south-westward of Ras Tanūb. Navigation is restricted by tidal flats, which dry in places, to a comparatively narrow channel near the western shore of the estuary.

Fasht al Muā (Miairiz) is a bank of sand and mud, which dries in 35 patches, extending about 12 miles south-south-eastward from Ras Tanūb. It is separated from the point and the coast eastward of it by Khôr Ghazlān, in which there are depths of about 9 feet ($2^{\text{m}}7$). This channel is approached through Khôr Bahrgān, between Fasht al Muā on the western side, and the flats westward of Ras Bahrgān 40 on the eastern side ; it is about $3\frac{1}{2}$ miles wide, with depths of from 9 to 18 feet ($2^{\text{m}}7$ to $5^{\text{m}}5$).

About $1\frac{1}{2}$ miles north-westward of Ras Tanūb is the mouth of a river or creek with extensive ruins on its banks. The coast north-westward is nearly all covered at high water and has not been surveyed ; it is fronted by tidal flats which are intersected by a number of deep channels which also have not been surveyed. 45

A shoal, with depths of 5 fathoms ($9^{\text{m}}1$), which has not been examined, marked by discolouration and overfalls, was reported in 1937, to lie about 24 miles south-south-eastward of Ras Tanūb. A narrow 50 bank, with depths of less than 6 fathoms ($11^{\text{m}}0$), hard sand and shells, extends about 12 miles north-westward from this shoal, and in 1938, foul ground was reported at its north-western end.

Charts 2837b, 748b.

Chart 1265.

Bu Sif is the south-eastern extremity of a low swampy tract intersected by creeks, which extends about 15 miles westward to the mouth of the Bahmishîr river (page 255). Khôr Silaik, entered close westward of Bu Sif, has a depth of about 6 feet ($1^{\text{m}}8$) at its mouth and is reported to connect with the Kârûn river (page 256); Khôr Khuwairin (Kuwarin), the entrance to which lies about 8 miles westward of Bu Sif, also connects with the Kârûn river, but neither of these has been explored for any distance.

10 The navigable channel of Khôr Müsa is entered across a bar, lying about 7 miles eastward of Bu Sif (*Lat. 30° 01' N., Long. 48° 56' E.*), over which there was reported, in 1939, to be a least depth of 24 feet ($7^{\text{m}}3$). Within the bar, the channel is about $1\frac{1}{2}$ miles wide. The banks at the entrance to Khôr Müsa are liable to change. The south-western edge of Fasht al Muâ, which forms the eastern side of the channel, is bordered by a chain of sand banks which dry.

A light-and-whistle-buoy, painted white, and exhibiting a *white flashing light every six seconds*, is moored about 15 miles south-eastward of Bu Sif.

20 "Fairway" light-buoy, painted white, and exhibiting a *white group flashing light showing two flashes every six seconds*, is moored about 11 miles east-south-eastward of Bu Sif.

The bar is marked by three light-buoys, two on the western side, painted white, and one on the eastern side, painted red. The southern buoy on the western side exhibits a *white group flashing light showing three flashes every nine seconds*: the eastern buoy exhibits a *red flashing light every three seconds*: the northern buoy on the western side exhibits a *white flashing light every three seconds*.

Above the bar, the channel is marked by five light-buoys, as far as 30 the entrance to Khôr Qanâqeh (page 233), above which it is marked by light beacons and buoys.

Bunneh, the eastern end of which lies about 2 miles westward of Ras Tanûb, is a low island, on which there is a ruin. Darâ, about $5\frac{1}{2}$ miles south-westward of Bunneh, and separated from it by Khôr 35 Wâstah, is a low island, and in places swampy.

About 7 miles north-westward of Darâ, and on the edge of the eastern shore bank of Khôr Müsa, is an extensive rocky shoal which dries 7 feet ($2^{\text{m}}1$). About 2 miles north-north-westward of this shoal, and in the middle of the fairway is Qassâr bin Siswân, a rocky shoal, 40 with a least depth of 4 feet ($1^{\text{m}}2$): the main channel lies on the western side of it. Qabr-an-Nâkhuda, a low islet, lies on the flat on the eastern side of the channel, about $6\frac{1}{2}$ miles north-north-westward of Qassâr bin Siswân.

Above Khôr Qanâqeh the left bank of Khôr Müsa is well defined and 45 always above high water; it is steep-to as far as the entrance to Khôr Döraq, about 15 miles above the mouth of Khôr Qanâqeh, and forms a guide to the channel.

Khôr Döraq trends north-westward and is somewhat tortuous in its lower reaches, above which it trends northward and probably connects 50 with the Kârûn river.

The main channel continues east-north-eastward for about 6 miles and thence, under the name of Khôr Ma 'shûr, trends north-north-eastward for about 7 miles.

Bandar Shâpûr.—Light.—Bandar Shâpûr is situated on the

Charts 2837b, 748b.

Chart 1265.

seaward edge of an extensive mud flat on the northern side of Khör Müsa, about 45 miles from its entrance. It is the southern terminus of the Trans-Persian railway.

There is a jetty, which, in 1941, had one berth, 1,000 feet (304^m8) 5 in length, on its seaward side, with a depth of 31 feet (9^m4), which is connected to the railway. The inner side of the jetty is only available for small craft. A travelling crane, with a lifting capacity of 12 tons, is available, but there are no fixed cranes on the jetty.

A light (*Lat. 30° 27' N., Long. 49° 06' E.*) is exhibited from the jetty. 10

There are two hauling-off buoys moored off the jetty.

A limited amount of fresh water could be supplied, but 2 or 3 days notice is required.

Anchorage.—Directions.—Tidal streams.—A vessel without local knowledge having crossed the bar should anchor, in a depth of 15 7 fathoms (12^m8), about 3 miles above it and wait until the tide has fallen sufficiently for the mud flat on the western side to uncover. This bank is steep-to, and by following it the vessel may proceed to Khör Qanāqeh.

The tidal streams set north-north-west and south-south-east, turning 20 about the times of high and low water, respectively. The greatest rate observed, in February, 1922, was 1½ knots.

Caution should be exercised when passing Qassār bin Siswān, for the out-going tidal stream there attains a rate of about 3 knots and causes eddies and tide-rips over the shoal. 25

The most difficult part of Khör Müsa, especially when the tidal streams are strong, is reported to be at its junction with Khör Wāstah.

Chart 1265, with plan of Khor Musa anchorage.

Khör Qanāqeh extends westward from a position about 19 miles northward of Bu Sif; within its entrance its banks are steep-to, but 30 there are flats on either side of its mouth.

Khör Qanāqeh (Abu Khadhair) can be ascended about 5 miles above its junction with Khör Müsa by keeping in mid-channel; farther up, the channel becomes too narrow for a vessel of any length to turn.

Anchorage may be obtained off the entrance to Khör Qanāqeh with 35 Qabr-an-Nākhuda bearing 095°, distant 1½ miles.

Chart 1265.

Pilots.—Two pilots, and a chief pilot or Harbour Master, are available, whose services may be obtained by communicating with the vessel's agents at Ahwāz, Basra or Khorramshahr; he will meet the 40 vessel in the vicinity of the light-and-whistle-buoy. Notice must be given 24 hours, or more if possible, in advance. The chief pilot takes charge when nearing Bandar Shāpūr and berths all vessels.

SHATT AL 'ARAB.—General remarks.—This important river is formed by the confluence of the rivers Tigris (page 252) and 45 Euphrates (page 255), which takes place at Al Qurna, about 110 miles from the open waters of the Persian gulf. Parallel with, and eastward of the lower half of the Shatt al 'Arab, flows the Bahmishir river (page 255), which forms the outlet to the sea of the Kārūn river (page 256); this latter is connected to the Shatt al 'Arab by Hafar channel, 50 an artificial cutting, and the large island thus formed between the Shatt al 'Arab and Bahmishir river is known as Jazirat-al-Khidhr or Ābādān island. Khorramshahr (page 247) is situated on the northern

Chart 1265.

bank of Hafar channel, and the city of Basra (page 249) is in the Shatt al 'Arab, about 19 miles above the entrance of Hafar channel. Abādān (page 245), at which place are the refineries of the Anglo-Persian Oil Company, is situated on the island of that name on the left bank of the Shatt al 'Arab, about 8 miles south-eastward of Khorramshahr, with Bāwardā (*Lat. 30° 19' N., Long. 48° 18' E.*), about one mile below it.

The eastern bank of the Shatt al 'Arab as far up as Khaiyin canal, 10 that is, about $3\frac{1}{2}$ miles above the entrance of Hafar channel, is Persian ; the western bank from the entrance of the river to Khaiyin canal, and both banks above that, are in 'Iraqi territory.

The Shatt al 'Arab is navigable by any vessel able to cross the bar at its entrance as far as Basra harbour (page 235).

Chart 1235.

At the mouth of the river, both banks are very low and are bordered by date palms. Ras al Bisha, the western entrance point, has some small date palms on it, and the ruins of an old Turkish fort stand on the bank of the river about $1\frac{1}{2}$ miles north-westward of the point ; on the 20 opposite bank, about 2 miles northward of the ruins of the old Turkish fort, is an old Persian mud fort. The seaward and lower parts of the banks on both sides of the river are thickly overgrown with reeds and coarse grass ; the soil, being a soft alluvial mud, is so soft that it is almost impossible to land, and the attempt should not be made any- 25 where near the forts.

Above the entrance, the banks on both sides continue very low to and above Basra, and are intersected by numerous irrigation canals ; excepting the bunds enclosing the plantations, the land is often submerged. The belt of land near the river from Fao, situated about 30 3 miles above the ruins of the old Turkish fort, as far, and for a few miles above, Al Qurna, is exceedingly fertile and produces very fine dates as well as grain, fruit and vegetables of various kinds.

The date groves extend from half a mile to 2 miles from the river bank, but beyond them is desert or swamp. In places the date groves 35 along the banks are interrupted by tracts of sandy uncultivated land. Excellent duck and snipe shooting may be had along the banks of the river, especially at Fao and above Basra ; partridges also are plentiful, and bustard are found in the desert round Basra. The close season for game is from June 1st to October 1st, but sand grouse may be shot 40 at any time of the year.

On the falling tide, the water in the river is fresh, even at Fao, except in the autumn when the river is low and it is then slightly brackish ; about 10 miles above Fao the water is at all times fresh.

Chart 1265.

Approaches to Shatt al 'Arab.—Light-vessel.—Dangers.—Buoyage.—Shoals, with depths of from 31 to 34 feet (9^m4 to 10^m4), lie about 36 miles south-south-eastward of Ras al Bisha.

Palinurus shoal, with a depth of 18 feet (5^m5), lies about 22 miles south-eastward of Ras al Bisha, and is marked on its eastern side by 50 a red conical buoy.

A shoal, with a least depth of 30 feet (9^m1), lies about 6 miles eastward of Palinurus shoal. Eastern shoal light-buoy, painted in red and white vertical stripes, and exhibiting a *white flashing* light, is moored on the western side of this shoal. Vessels of deep draught

Chart 1265.

should pass westward of the light-buoy. About $1\frac{1}{4}$ miles north-eastward of this shoal is a bank, with a least depth of 25 feet ($7^{\text{m}6}$). Between the latter and the entrance to Rooka channel (page 239) there are several patches, with depths of from 32 to 35 feet ($9^{\text{m}8}$ to $10^{\text{m}7}$), the positions of which may best be seen on the chart. A 3-fathom ($5^{\text{m}5}$) patch lies about 15 miles southward of Bu Sif (*Lat.* $30^{\circ} 0' N.$, *Long.* $48^{\circ} 56' E.$). Maidān 'Ali is an extensive shallow flat extending from the coast eastward of the entrance to Shatt al 'Arab; the bottom in the approach is mud and sand, the latter predominating **10** towards the land.

Charts 3842, 1235.

Old semaphore tower (*see* view on chart 3842) is situated on the coastal bank about 9 miles south-eastward of Ras al Bisha.

An obstruction was reported, in 1935, to lie about $3\frac{1}{4}$ miles south-westward of Old semaphore tower. **15**

Rooka light-vessel, painted red, with "Rooka" in white letters on her sides, is moored in the southern approach to Rooka channel, about $4\frac{1}{4}$ miles east-south-eastward of Old semaphore tower. A light is exhibited, at an elevation of 30 feet ($9^{\text{m}1}$), from a superstructure **20** surmounted by a framework cylinder.

A light-buoy, the upper half painted yellow and the lower half black, exhibiting a *red flashing* light *every six seconds*, marks the spoil ground about $2\frac{1}{4}$ miles south-eastward of Old semaphore tower, but should not be used as a navigational mark. **25**

Outer Western light-buoy, painted red, and exhibiting a *red group flashing* light, giving *two flashes*, is moored about $2\frac{1}{4}$ miles north-eastward of Old semaphore tower.

Charts 3842, 1235, 1265.

Regulations.—Pilotage.—Special regulations are in force in the **30** port and harbours of Basra, Khasrowabad, and Ābādān. The following information is for the use of vessels approaching from seaward.

The Port of Basra extends up the Shatt al 'Arab from the sea as far as a stone beacon at Nahr 'Umr, about 88 miles from the entrance to **35** Rooka channel.

Charts 3842, 1235.

For the limits of the Harbour of Kabda, *see* page 245.

The Harbour of Ābādān extends from the "Slow" notice-board on the right bank of the river above Zayadiya (Zayadi creek) to the **40** "Slow" notice-board on the right bank of the river above Seeba (page 246).

The Harbour of Basra extends from Seraji creek, about 2 miles below the Custom house at 'Ashār, to the mouth of Qarinat 'Ali, about 5 miles above the Custom house, and includes the waters of all tributary **45** creeks within those limits for a distance of 50 yards ($45^{\text{m}7}$) from their junction with the main stream.

The Harbour of Khasrowabad is situated between the "Slow" notice-boards on the right bank in Ābādān reach.

With the exception of H.M. ships, those of the Government of **50** Iraq, and sailing craft, pilotage is compulsory for all vessels entering, leaving, or navigating the Shatt al 'Arab. Pilotage in the river outside the harbour limits of Khasrowabad, Ābādān and Basra is conducted by river pilots, and within those limits by harbour masters,

Charts 1265, 2837b, 748b.

Charts 3842, 1235.

except in the case of a vessel proceeding through either harbour without stopping when the river pilot will conduct the vessel through it.

Owing to the alterations which are continually taking place, it is essential that H.M. ships should obtain the latest information concerning the available depths in the channels and the traffic and other regulations in force from the pilot vessel before attempting to enter. The exemption from pilotage granted to H.M. ships does not apply to movements within harbour limits ordinarily conducted by harbour masters. Under no circumstances are vessels under sail permitted to navigate Rooka channel.

A steam pilot vessel, painted white with a yellow funnel and two masts, is stationed about 4 miles south-south-eastward of Old semaphore tower (*Lat. 29° 50' N., Long. 48° 43' E.*). Vessels approaching her from seaward should display their number and then their draught in feet and inches, and a pilot will be sent off. In the event of the pilot vessel being temporarily off her station, the vessel requiring the pilot should anchor there and communicate with the Control Officer.

An anchorage is prohibited northward of a line drawn in a 110° direction for a distance of 7 miles, from Old semaphore tower.

An anchorage is prohibited within the harbour limits of Abādān reach and of Khasrowabad, as indicated by "Slow" notice-boards on the western bank.

In order that vessels proceeding in opposite directions shall not meet in Rooka channel, permission to enter must first be obtained through the pilot vessel from the officer in charge of the control vessel. No vessel may overtake or pass another vessel proceeding in the same direction in any of the dredged channels, nor in the river between North house (page 243) and Ma 'awiya spit light-beacon (page 245) or in the dredged channels seaward of the beam bearing of Kasba rear leading beacon.

The control vessel is a steam vessel, with two masts and one funnel, painted black, with the word "Control" on her sides in white letters; she is moored on the north-eastern side of the channel about 1½ miles north-westward of the junction of the inner ends of Rooka and Western channels. (See view facing this page). The vessel shows both tidal and traffic signals by day and at night, except that, when the channel is closed the exhibition of tidal signals is discontinued and the vessel then carries the lights prescribed for a vessel at anchor. Any signals exhibited by the control vessel must be instantly obeyed.

The control vessel is fitted with wireless; for details see Admiralty List of Radio Signals.

A fog signal is occasionally sounded from the control vessel.

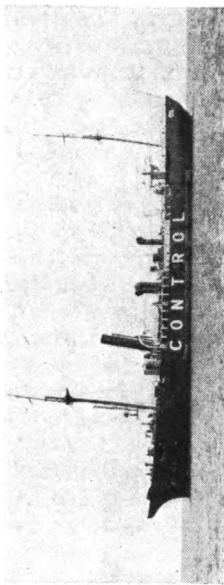
When the dredger is working in Rooka channel, a vessel entering from seaward must make the signal prescribed on page 238, and be guided by the reply.

Vessels employed in surveying display a red cone, and all vessels under way should endeavour to keep clear of them.

Vessels employed in lifting weights or moorings or from which a diver is working display a blue square flag, and passing vessels should reduce speed to the lowest compatible with safety and give such vessels as wide a berth as possible.

This rule also applies to small craft engaged in dredging, grabbing or pile driving operations.

Charts 1265, 2837b, 748b.



Shatt al 'Arab Control-vessel.

(Original dated 1928.)

Charts 3842, 1235.

Between sunrise and sunset all vessels, when at anchor in or near a fairway, shall display forward, where it can best be seen, one black ball, 2 feet (0^m6) in diameter.

No vessels within the harbours of Ābādān (*Lat. 30° 20' N., Long. 48° 5 17' E.*) and Basra, other than small steam boats, should proceed against the stream at a greater speed than 5 knots over the ground.

If a vessel sights another approaching from the opposite direction at or near the inner bar buoys, the vessel stemming the current must reduce speed and navigate with caution until the other vessel is finally 10 past and clear. All alterations of course must be clearly indicated on the siren or whistle.

A vessel inward bound through the Western channel sighting an outward bound vessel approaching the Outer Western light-buoy of that channel should reduce speed so as to pass the other vessel seaward 15 of that light-buoy.

Vessels are not allowed to enter the dredged channel on a falling tide unless special permission to do so is obtained from the Control Officer.

A vessel should not on any account attempt to enter the channel if by doing so she will meet or pass another vessel. 20

Vessels should regulate their speed so as not to approach a vessel ahead within a distance of one mile. This applies to vessels bound both outward and inward.

An inward bound vessel wishing to enter by the dredged channel should obtain permission to do so from the pilot vessel. 25

Owing to the risk of collision between vessels inward bound through the Western channel and those outward bound through Rooka channel, all vessels navigating between the Outer Western light-buoy and No. 18 light-buoy in Fao reach (page 242) are to keep to their port hand side of the channel, passing starboard side to starboard side. 30

A vessel taking the ground between the outer light-buoys and the inner bar should at once display the International Code signal "A.T." by day, or at night exhibit two *red* lights, disposed vertically, as laid down in the Regulations for Preventing Collisions at Sea; in addition, should she block the channel, she should sound the letter "U" in 35 Morse code (· · —) on her whistle or siren until answered by a tug or any following vessel repeating the signal. Should the vessel aground be in such a position that it is considered that there is room for a following vessel to pass, the signal "U" shall be followed by one short blast to indicate that she is aground on her starboard side of 40 the channel and that following vessels may pass her on her port side, or by two short blasts to indicate that she is aground on her port side of the channel and that following vessels may pass her on her starboard side. These signals shall be repeated by the following vessel to indicate that she intends to attempt to pass. 45

A vessel requiring the assistance of the Control Officer or the tender should display flag "T" of the International Code of Signals where it can best be seen.

Speed within the limits of the port is restricted to 10 knots over the ground. All vessels, when compatible with safety, are to proceed 50 at slow speed when passing Fao, Bāwardā, Ābādān and Al Khast, and also between any positions marked by "Slow" notice-boards.

Special regulations are in force for vessels carrying explosives within the Port of Basra.

Charts 1265, 2837b, 748b.

Charts 3842, 1235.

Signals.—*Traffic.*—Traffic signals are shown by the control vessel and also at the flagstaff at Fao (*Lat. 29° 58' N., Long. 48° 29' E.*). (*See diagram facing this page.*)

5 A black ball, by day, or a *green* light over a *red* light, at night, indicates that the channel is open to outward bound vessels.

Two black balls, disposed vertically, by day, or a *green* light over a *white* light, at night, indicates that the channel is temporarily closed or is obstructed by a vessel.

10 A black cone, point up, or flag "N" of the International Code of Signals, indicates that no vessel is to pass the control station exhibiting such signal. At night the control vessel communicates by flashing lamp.

Tidal.—Signals indicating the rise of the tide on the bar above chart datum are shown by day and at night by the control vessel and at Fao. The tidal semaphores have two movable arms, the upper of which indicates feet and the lower inches, as shown in the diagram. One black square shape is displayed when the rise is one fathom ($1^{\text{m}}8$) or over, and two black square shapes when the rise

20 is 2 fathoms ($3^{\text{m}}7$) or over.

At night, the following signals are exhibited:—

One *green* light indicates a rise of 0 feet or 12 feet (0 or $3^{\text{m}}7$).

One *white* light indicates a rise of 1 foot or 7 feet ($0^{\text{m}}3$ or $2^{\text{m}}1$).

One *red* light indicates a rise of 2 feet or 8 feet ($0^{\text{m}}6$ or $2^{\text{m}}4$).

25 Two *red* lights, disposed vertically, indicates a rise of 3 feet or 9 feet ($0^{\text{m}}9$ or $2^{\text{m}}7$).

One *red* light over one *white* light indicates a rise of 4 feet or 10 feet ($1^{\text{m}}2$ or $3^{\text{m}}0$).

30 One *white* light over one *red* light indicates a rise of 5 feet or 11 feet ($1^{\text{m}}5$ or $3^{\text{m}}4$).

Two *white* lights, disposed vertically, indicates a rise of 6 feet ($1^{\text{m}}8$).

One *green* light exhibited under any of the above signals, with the exception of that indicating 0 feet or 12 feet ($0^{\text{m}}3$ or $3^{\text{m}}7$), indicates an additional 6 inches ($0^{\text{m}}1$) above the exact foot.

When a strong shamāl is blowing there is a considerable quantity of sand in the atmosphere, which sometimes makes it difficult to distinguish whether a *red* light is above or below a *white* light. Great caution should, therefore, be exercised when any signal is exhibited

40 consisting of both *red* and *white* lights.

Dredgers.—Whilst engaged in dredging operations, the dredgers will show the following signals:—

By day.—

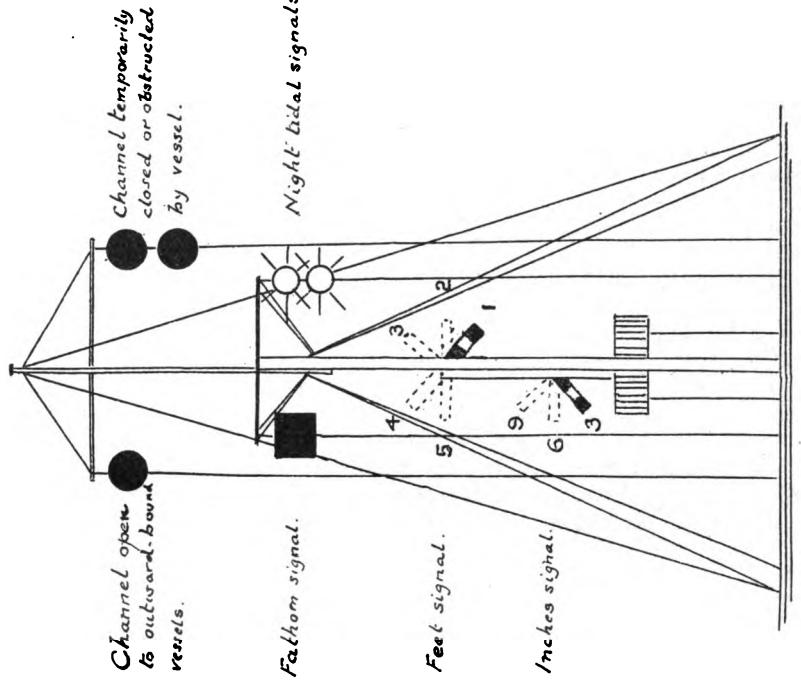
45 (a) Three black balls in the form of a triangle, one at the masthead and one at each yardarm.

(b) When necessary, a red flag will be displayed at the yardarm, instead of the black ball, on that side on which the channel is *not* available for navigation.

At night.—

50 (a) Three *white* lights in the form of a triangle, one at the masthead and one at each yardarm.

(b) When necessary, a *red* light at the yardarm, instead of the *white* light, on that side on which the channel is *not* available for navigation.



Tidal and Traffic signals.

Charts 3842, 1235.

When a dredger is working in Rooka channel, inward bound vessels on arriving at Rooka light-vessel (page 235), must sound a prolonged blast on their whistle or siren and must not enter the channel until the dredger replies with four prolonged blasts on her whistle or four long flashes on a lamp, which signals indicate that she is keeping clear of the channel or that, whilst remaining in the channel, vessels may pass her, in which case the signals described above will be exhibited.

Channels.—Maraqqat 'Abdullah and Maraqqat Ābādān are two extensive banks, which dry in patches, and extend about 7 miles east-south-eastward from Ras al Bisha (*Lat.* $29^{\circ} 55' N.$, *Long.* $48^{\circ} 34' E.$) and the southern extremity of Jazirat al Khidhr, respectively. The Shatt al 'Arab flows out between these banks, and is approached through two channels across the outer bar, namely, Rooka channel, for deep draught vessels, and the Western channel, for shallow draught vessels, about half a mile southward of, and parallel to, Rooka channel.

Rooka channel was dredged, in 1938, to a depth of 23 feet (7^m0).

The Western channel had, in December, 1935, a depth of 8 feet (2^m4). The depths in both channels are liable to change, but are maintained by dredging.

The inner bar, situated about $2\frac{1}{2}$ miles east-north-eastward of Ras al Bisha, was dredged, in 1938, to a least depth of $23\frac{1}{2}$ feet (7^m2), whence the least depth to Fao was $24\frac{1}{2}$ feet (7^m5).

Rooka channel.—Lights.—Buoyage.—Rooka channel, the main entrance, is approached through Khōr al Amaya, a comparatively deep and narrow gut running north-westward between the western edge of Maidān 'Ali and the eastern edge of the outer bar.

The centre line of the channel is indicated by the alignment of two beacons at both the inner and outer ends, from which lights are exhibited. The front light at the inner end is exhibited, at an elevation of 18 feet (5^m5), from a black beacon on piles, situated on the northern edge of Maraqqat 'Abdullah, about $4\frac{1}{2}$ miles north-westward of Old semaphore tower; the rear light is exhibited, at an elevation of 65 feet (19^m8), from an iron framework mast, surmounted by an inverted triangle, about one mile west-north-westward of the front light. These lights in line bear 284° .

The front light at the outer end of the channel is exhibited, at an elevation of 18 feet (5^m5), from a circular tower on piles, surmounted by a white triangle, situated about 6 miles east-south-eastward of the front light beacon at the inner end of the channel; the rear light is exhibited, at an elevation of 55 feet (16^m8), from a black iron framework tower, surmounted by a white inverted triangle, 8 cables east-south-eastward of the front light. These lights in line bear 104° .

The northern and southern limits of Rooka channel are indicated by the alignment of two pairs of lights near the inner leading lights.

A can light-buoy, No. 2, painted red, exhibiting a *red flashing* light every second, is moored on the southern side of the channel about 9 cables westward of the outer front leading light (*Lat.* $29^{\circ} 52' N.$, *Long.* $48^{\circ} 46' E.$).

A conical light-buoy, painted black, exhibiting a *white flashing* light, showing short flashes, is moored on the northern side of the channel, about one mile west-north-westward of the outer front leading light.

A can light-buoy, painted white, exhibiting a *white occulting* light

Charts 1265, 2837b, 748b.

Charts 3842, 1235.

every eight seconds, eclipse two seconds, is moored 14 cables north-westward of the outer front leading light. This light-buoy in line with the conical light-buoy leads through the approach to the eastern end of Rooka channel from south-eastward.

The southern side of Rooka channel is marked by Nos. 4, 6, 8 and 10 red pile structures, from each of which a light is exhibited, at an elevation of 18 feet (5^m5), and by light-buoy, No. 12, painted in red and white bands, exhibiting a *red flashing light every twelve seconds*, situated about 6 cables east-south-eastward of the inner front leading light, at the junction of Rooka channel and the Inner bar reach.

The northern side of the channel is marked by Nos. 3, 5, 7, 9 and 11 black pile structures, from each of which a light is exhibited, at an elevation of 18 feet (5^m5).

15 Tide-gauge.—A tide gauge is situated on the southern side of Rooka channel, about 1½ miles west-north-westward of the outer front leading light-beacon.

DISTANCE TABLES

SHATT AL 'ARAB			TIGRIS RIVER		
	Nautical miles			Nautical miles	
Palinurus shoal . . .	—	—	Al Qurna . . .	—	—
Entrance of Rooka channel . . .	14	14	Al 'Azair or Ezra's tomb . . .	27	27
Inner end of Rooka channel . . .	4	18	Aburuba . . .	14	41
Control vessel . . .	2	20	Qal'a Sâlih . . .	12	53
Inner bar buoys . . .	3	23	Abû Sidra . . .	15	68
Fao . . .	6	29	'Amâra . . .	14	82
Kasba point . . .	2	31	Kumait . . .	27	109
Chellabi point . . .	9	40	'Ali Sharqî . . .	14	123
Âbâdân . . .	16	56	Fulaifila . . .	20	143
Khorramshahr . . .	11	67	'Ali Gharbî . . .	16	159
Satan's Gap . . .	4	71	Shaikh Sa'ad . . .	30	189
Abu el Kassib . . .	4	75	Kût al Imâra . . .	40	229
Sanger village . . .	3½	78½	Bghaila . . .	43	272
Basra ('Ashâr creek) . . .	7	85½	Al 'Aziziya . . .	53	325
Ma'qil (No. 10 berth) . . .	2½	88	El Kutineh . . .	11	336
Qarmat 'Ali (Euphrates mouth) . . .	2½	90½	Baghdâdiya . . .	9	345
Nahr 'Umar . . .	11½	102	Lajj . . .	28	373
Al Qurna . . .	22	124	Bustân . . .	11	384
			Ctesiphon . . .	7	391
			Diahah river . . .	12	403
			Baghdâd . . .	18	421

KÂRUN RIVER

EUPHRATES RIVER			Khorramshahr . . .		
Al Qurna . . .	—	—	Mârid . . .	10	10
Madîna . . .	13	13	Ahwâz . . .	100	110
Kabâish . . .	14	27	Wais . . .	24½	134½
Hakika . . .	22	49	Mullasani . . .	7	141½
Sûq ash Shuyûkh . . .	6	55	Band-i-Qîr . . .	4	145½
An Nâsiriya . . .	20	75	Saiyid Hassan . . .	6½	152
Samâwa . . .	65	140	Dar-i-Khazîneh . . .	15	167
			Shûshtar . . .	24	191

Charts 1265, 2837b, 748b.

Charts 3842, 1235.

Tidal streams.—Tides.—In the vicinity of Palinurus shoal the tidal stream on the rising tide attains a rate of from half a knot to $1\frac{1}{2}$ knots, and that on the falling tide, from $1\frac{1}{2}$ to $2\frac{1}{2}$ knots.

In Khōr al Amaya, the tidal streams attain a rate of from one to 2 knots and continue to run for about 45 minutes at spring tides, and 25 minutes at neaps, after high and low water, respectively. The duration of slack water is about 20 minutes. The in-going tidal stream sets in a north-westerly direction.

In Rooka channel, the streams set fairly through the channel, except at spring tides, when at either end there is a strong northerly set on the in-going stream, and a strong southerly set on the out-going stream; at neap tides these cross-currents are inappreciable. The maximum rate of the in-going stream, which at springs is from $1\frac{1}{2}$ to 2 knots and at neaps from one to $1\frac{1}{2}$ knots, occurs at about half-tide. The maximum rate of the out-going stream is from 3 to $3\frac{1}{2}$ knots at springs, and from 2 to $2\frac{1}{2}$ knots at neaps. At spring tides, the in-going stream continues to flow for about 40 minutes after the time of high water; at neaps it is irregular, but usually continues for about one hour after high water. The out-going stream continues for about 30 minutes after low water at springs, and for about one hour after low water at neaps.

H.M.S. *Triad*, in 1931, reported that the observed direction of the surface stream is not a reliable guide, for, when anchored below the control vessel, she swung to the in-going stream, about 2 hours after the time of low water, whilst an out-going stream with a rate of 2 knots continued to run past her. Caution is, therefore, necessary, as, if when turning into Rooka channel, allowance is made for an observed out-going stream, it may be that the sub-surface in-going stream is already making, which might easily put a vessel on to the bank.

Tidal predictions for the Shatt al 'Arab outer bar are given in the Admiralty Tide Tables, Part I; tidal differences for Basra (*Lat. 30° 30' N., Long. 47° 50' E.*) will be found in Part II.

The tides are affected by a large diurnal inequality in both times and heights, varying with the declination of the moon. Near the equinoxes it is more pronounced at neaps than at springs, and near the solstices the reverse is the case.

Seasonal variations in the level of the river are small at the outer bar, less than ± 0.5 feet ($0^{\text{m}}1$); but at Basra they are considerable, $+2.5$ feet ($0^{\text{m}}7$) in June, and -1.5 feet ($0^{\text{m}}4$) in October; these affect high and low water equally. In the river, the highest levels occur in May, June, and July, when the Shatt al 'Arab is discharging the combined flood-waters of the Euphrates and Tigris. The lowest levels occur in October and November.

Both the times and the heights of the tide are very much affected by the prevailing wind. A heavy *kaus* will raise the level of the river by 2 or 3 feet ($0^{\text{m}}6$ or $0^{\text{m}}9$), causing both a higher high water and a higher low water; it will also accelerate the time of high water. On the other hand, a strong *shamāl* will lower the level of the river, so that at low water the tide may fall below the zero of the tide gauge, and it will retard the time of high water.

Charts 3842, 3843.

Inner bar reach.—Lights.—Buoyage.—This reach extends

Charts 1265, 2837b, 748b.

Charts 3842, 3843.

about 5 miles, from the junction of Rooka and Western channels to a position about 2 miles north-eastward of Ras al Bisha.

The centre line of the dredged channel through the reach is indicated by the alignment of two light beacons situated north-westward of its inner end, on the northern side of the river, and by two light beacons south-eastward of its outer end.

The front light of the inner pair is exhibited, at an elevation of 19 feet (5^m8), from a black iron structure, surmounted by a white inverted triangle, situated on the coastal bank about 1 $\frac{1}{2}$ miles north-eastward of Ras al Bisha ; the rear light is exhibited, at an elevation of 50 feet (15^m2), from a white pile beacon, surmounted by a black triangle. These light beacons in line bear 304°.

The front light of the outer pair is exhibited, at an elevation of 18 feet (5^m5), from a black circular pedestal on piles, surmounted by a triangle, about 2 $\frac{1}{4}$ miles north-north-westward of Old semaphore tower ; the rear light is exhibited, at an elevation of 54 feet (16^m5), from a black steel framework structure, surmounted by a white triangle, about 8 $\frac{1}{4}$ cables south-eastward of the front light. These light beacons in line bear 124°.

A can light-buoy, No. 14, painted in red and white vertical stripes, exhibiting a *white group flashing* light, showing *two flashes every ten seconds*, is moored on the south-western side of the channel, about 4 cables north-north-westward of the inner front leading light of

25 Rooka channel.

Chart 3843.

A conical light-buoy, No. 13, painted black, exhibiting a *white flashing* light, is moored on the north-eastern side of the channel, about 2 $\frac{1}{2}$ miles south-eastward of the inner front leading light of Inner

30 bar reach.

A can light-buoy, No. 16, painted in red and white vertical stripes, exhibiting a *white group flashing* light, showing *two flashes every ten seconds*, is moored on the south-western side of the channel at the junction of Inner bar and Fao reaches, about 5 $\frac{1}{2}$ cables south-eastward

35 of the inner front leading light of Inner bar reach.

Fao reach.—Lights.—Light-buoys.—Beacons.—This reach extends from the Inner bar to Fao (*Lat. 29° 58' N., Long. 48° 29' E.*), a distance of about 6 miles.

The centre line of the dredged channel is indicated by the alignment 40 of two light beacons at Fao, which are duplicated seaward for the benefit of vessels proceeding down the river, by three beacons erected on Maraqqat Abādān, the front and middle ones of which exhibit lights.

The front leading light at Fao is exhibited, at an elevation of 30 feet (9^m1), from a white framework mast situated on the southern bank 45 of the river about half a mile south-eastward of the flagstaff at Fao ; the rear light is exhibited, at an elevation of 75 feet (22^m9), from a black framework mast, surmounted by a triangle, situated about three-quarters of a mile west-north-westward of the front light structure. These lights in line bear 287 $\frac{1}{2}$ °.

50 *Chart 3842.*

The front leading light on Maraqqat Abādān is exhibited, at an elevation of 17 feet (5^m2), from a lantern on a black circular pedestal on wooden piles, on the northern side of Inner bar reach, about 3 miles east-north-eastward of Ras al Bisha ; the middle light is exhibited,

Chart 3842.

at an elevation of 47 feet ($14^{\text{m}}3$), from a black steel column on piles, about one mile east-south-eastward of the front light structure. The rear beacon, which is unlighted, 30 feet ($9^{\text{m}}1$) in height and painted black, is situated about $2\frac{1}{4}$ miles east-south-eastward of the middle light structure. These leading lights and beacon in line bear $107\frac{1}{4}^{\circ}$.
5

Chart 3843.

The front leading light at the north-western end of Fao reach is exhibited, at an elevation of 16 feet ($4^{\text{m}}9$), from a white iron pile beacon, surmounted by a triangle, situated on the southern bank about $1\frac{1}{2}$ miles north-westward of Fao reach rear leading light-beacon ; this beacon in line with Kasba reach rear leading beacon (page 244) bearing 303° , leads from Fao reach dredged channel to the fairway off Fao.
10

The front leading light at the south-eastern end of Fao reach on the southern bank about $2\frac{1}{4}$ miles north-westward of Ras al Bisha, is 15 exhibited, at an elevation of 12 feet ($3^{\text{m}}7$), from a steel framework structure, surmounted by a white triangle ; the rear light is exhibited, at an elevation of 63 feet ($19^{\text{m}}2$), from a black framework mast on a white base, about half a mile east-south-eastward of the front light. These leading lights in line, bear 123° .
20

A conical light-buoy, No. 15, painted black, exhibiting a *green flashing* light, is moored on the north-eastern side of the channel, about $3\frac{1}{2}$ cables south-eastward of the Inner bar reach front leading light structure.

A can light-buoy, No. 18, painted red, exhibiting a *red flashing* light 25 is moored on the southern side of the channel, about 3 cables south-south-westward of the Inner bar reach rear leading light structure (*Lat. $29^{\circ} 57' N.$, Long. $48^{\circ} 35' E.$*).

A conical light-buoy, No. 17, painted black, exhibiting a *white flashing* light *every three seconds*, is moored on the northern side of the 30 channel, about $2\frac{1}{4}$ miles westward of the Inner bar reach rear leading light structure.

Tide-gauge.—A tide-gauge, from which a light is exhibited, and on which the tide is indicated by white figures on a black background, is established for the use of outward bound vessels, on the southern 35 side of Fao reach, about $1\frac{1}{2}$ miles west-south-westward of the Inner bar reach rear leading light structure.

Fao.—Fao is situated on the south-western bank of the river about 5 miles north-westward of Ras al Bisha. It is the repair and stores depot for the dredgers, and the buoyage depot for the port of Basra 40 and the Persian gulf lights.

There is a wooden jetty, with a depth of 3 feet ($0^{\text{m}}9$) at its head.

A mooring buoy for the use of dredgers is situated off the northern bank about 4 cables east-north-eastward of the head of the jetty.

Black notice-boards with the word "Slow" in white letters, are 45 situated on the south-western bank of the river about half a mile above and below Fao ; between them vessels must proceed at slow speed.

Traffic and tidal signals (see page 238) are exhibited from a mast, 100 feet ($30^{\text{m}}5$) in height, painted white and fitted with yards, close to the wooden jetty at Fao.
50

There is a hospital at Fao.

Kasba reach.—Lights.—Beacons.—Light-buoy.—Anchorage.
—This reach extends from a bend in the river at Kasba point on the eastern bank and about 2 miles above Fao, to North House, a square

Chart 3843.

mud house, without dome or minarets, used as a police post, situated on the eastern bank of the river about $3\frac{1}{2}$ miles above Kasba point. On the same bank and about $1\frac{1}{2}$ miles southward of North House, is a conspicuous square fort. In this reach the channel skirts the eastern bank of the river.

The centre line of the channel is indicated by the alignment of two leading lights. The front light is exhibited, at an elevation of 29 feet (8 m 8), from a white iron structure, surmounted by a diamond, situated 10 on the south-western side of the river about three-quarters of a mile south-westward of Kasba point ; the rear light is exhibited, at an elevation of 54 feet (16 m 5), from a white framework tower, surmounted by a black triangle, situated about $1\frac{1}{2}$ cables southward of the front light structure. These lights in line astern, bearing 178° , lead through 15 the fairway as far as the square fort.

About 8 cables above the front light structure in Kasba reach, and on the same side of the river, is the first pair of four sets of anchoring beacons for vessels of deep draught waiting to cross the bar. The beacons, from each of which a light is exhibited, consist in each case of 20 iron structures ; the front beacons carry a triangular daymark, at an elevation of 20 feet (6 m 1), and the rear beacons a St. George's cross at an elevation of 32 feet (9 m 8). These pairs of beacons are lettered consecutively from seaward "A", "B", "C", and "D", the letters being in white on a black background at the base of the beacons. 25 The berths indicated by the beacons are about 1,350 feet (411 m 5) apart.

Kasba beacon is a black and white surveying beacon, 50 feet (15 m 2) high, situated between "B" and "C" rear anchorage beacons.

North House beacon (*Lat. 30° 04' N., Long. 48° 27' E.*) consists of 30 a white steel mast with black bands, 45 feet (13 m 7) high, standing close westward of North House.

A can light-buoy, painted red, exhibiting a *red flashing* light *every five seconds*, is moored on the western side of the fairway, about $1\frac{1}{2}$ cables westward of North House beacon.

35 A vessel proceeding up river, after passing the square fort in Kasba reach, should steer to pass midway between North House beacon and the light-buoy. A vessel of deep draught should avoid arriving off North House at low water, as the depth in the channel there is not more than $25\frac{1}{2}$ feet (7 m 8).

40 North House to Kabda point.—Light.—Light-buoy.—Beacons.—Tide-gauge.—About $1\frac{1}{2}$ miles above North House, the channel closes the western bank.

Chellabi light-buoy, painted red and exhibiting a *red flashing* light *every three seconds*, is moored about 8 cables north-westward of North 45 House beacon.

An illuminated tide gauge is situated on the south-western bank, about $2\frac{1}{2}$ miles above North House.

Two notice-boards, carrying the letters "E" and "F", are situated one cable and $1\frac{1}{2}$ cables, respectively, below and above the tide gauge 50 to indicate anchorage berths for vessels of deep draught awaiting the tide to cross the bar at North House.

A large conspicuous house stands on the south-western bank, about $1\frac{1}{2}$ miles north-westward of the tide gauge.

Brick Kiln light is exhibited, at an elevation of 45 feet (13 m 7), from

Chart 3843.

a conspicuous white steel mast with black bands, situated on the western bank, about $2\frac{1}{2}$ miles above the tide gauge.

After passing Chellabi point, situated on the eastern bank about 5 miles above North House, the channel closes the eastern bank. 5
About $1\frac{1}{2}$ miles above this point, and on the same side of the river is Khaz 'alābād, a village with numerous mud and sandstone buildings, a stone pier, a flagstaff, and a Customs station.

Two black notice-boards, with "Slow" in white letters on them, stand on the western bank of the river, about $16\frac{1}{2}$ cables and $3\frac{1}{2}$ miles 10 north-north-eastward, respectively, of Brick Kiln light structure; the river area between these notice-boards is known as Kabda harbour. The northern board is situated on Kabda point.

Chart 3844.

Kabda reach.—Lights.—Light-buoys.—This reach lies between 15 Kabda point and Al Khast or Deep Water point, about 12 miles north-westward. For the first 9 miles the channel follows the south-western bank of the river, the opposite bank being bordered by a chain of islands and flats of which Mu'āviyeh (Ma'awiya) and Dawāsir islands are the largest.

Mu'āviyeh light-buoy, painted red and exhibiting a *red flashing* light *every five seconds*, is moored about $1\frac{1}{2}$ cables westward of the southern extremity of a spit which extends $6\frac{1}{2}$ cables southward from Mu'āviyeh island.

A light is exhibited, at an elevation of 20 feet (6^m1), from a white pile 25 structure with black bands, situated on the southern end of the spit, about 3 miles northward of Khaz 'alābād.

Deep-draught vessels should pass between the light-buoy and the light structure.

The fairway of the channel abreast and above Dawāsir island is indicated by the alignment of two light beacons. The front light (*Lat. 30° 13' N., Long. 48° 23' E.*) is exhibited, at an elevation of 25 feet (7^m6), from an iron pillar painted in black and white bands, on the south-western bank of the river, about $5\frac{1}{2}$ cables south-south-westward of the north-western extremity of Mu'āviyeh island; the rear light is 35 exhibited, at an elevation of 80 feet (24^m4), from an iron pillar painted in black and white bands, surmounted by a black triangle, situated about 4 cables south-eastward of the front light-beacon.

These light beacons in line astern bear 141° .

A conical light-buoy, painted black and exhibiting a *white flashing* light, is situated about 2 miles north-westward of the front leading light structure.

Ābādān reach.—Lights.—Caution.—Ābādān is situated on the north-eastern bank just below and opposite Al Khast. There are many large buildings at the refineries of the Anglo-Persian Oil Company, the tall chimneys of which are conspicuous.

The whole of Ābādān reach is a danger zone, and special regulations are in force therein. *See page 235.*

At Ābādān and Bāwārdā, about one mile south-eastward, there are 27 berths, alongside some of which ocean-going vessels may be berthed. 50
Lights are exhibited from Nos. 1 and 4 jetties. No. 7 jetty, which is 1,500 feet (457^m2) long, is the main cargo quay.

Anchorage is prohibited in Ābādān reach within the limits of the harbour indicated by the "Slow" notice-boards. These slow notice-

Chart 3844.

boards are situated on both sides of the river just below Bāwardā, and also on both banks northward of Al Khast, that on the right bank being a short distance below Seeba, a village, at which there is a Police 5 and Customs station.

There are a number of mooring buoys on the south-western side of the river between Abādān and Bāwardā. A Harbour Master boards vessels on arrival and berths them as necessary. All sea-going vessels, whether awaiting a berth or loaded must be moored below the lowest 10 jetty, at Bāwardā, and no vessel bound for Abādān or Bāwardā may ascend the river above that point until boarded by the Harbour Master.

There are five anchoring berths, lettered "A" to "E", below the line joining the two notice-boards, which mark the southern harbour 15 limit; the limit of each berth is marked by transit beacons on the right bank of the river.

The offices of the port are on board a hulk moored off Bāwardā.

A floating dock, from either end of which lights are exhibited, is moored on the south-western side of the river abreast No. 7 jetty; 20 for details, see Appendix I.

A framework wireless mast of the Anglo Persian Oil Company's W/T station is situated about 7 cables northward of No. 1 jetty.

Vessels in Abādān reach should on no account sound their sirens, except in a case of emergency, as the "fire alarm" at Abādān and 25 Bāwardā is given by siren.

Tidal streams.—At Abādān, the in-going tidal stream attains a rate of $1\frac{1}{2}$ knots, and the out-going stream 3 knots. Heavy flooding of the Tigris and Euphrates rivers, which is frequent during the late spring may increase the rate of the out-going stream to 5 knots.

Harbour facilities.—Fresh provisions are not usually obtainable at Abādān, though fresh meat, but of poor quality, can be obtained at a few days notice. Water can be obtained from the Anglo-Persian Oil Company. Fuel oil is supplied alongside the jetties or by lighter at the anchorage.

35 There is a floating crane, with a lifting capacity of 200 tons, one 10-ton crane near the eastern end of No. 7 jetty, and several 3-ton travelling cranes on No. 7 jetty.

Chart 3845.

Al Khast reach.—Light-buoy.—Northward of Al Khast (*Lat. 40° 30' N., Long. 48° 16' E.*), the deep channel is on the northern side of the river, and then crosses to the southern side, south-eastward and southward of Hāji Salbuq (Muhalla island), then it skirts the western side of that island, passing eastward of Gat'a island, Abu Dood island, and the banks extending northward from the latter.

45 A light-buoy, painted red and exhibiting a *red flashing* light, is moored about 2 cables south-westward of Harthah point, situated on the eastern bank, about $5\frac{1}{2}$ cables north-north-westward of the north-western extremity of Hāji Salbuq; it marks the eastern edge of the spit extending northward from Abu Dood island.

50 There is a tide gauge on the western side of the channel eastward of the south-eastern extremity of Abu Dood island.

The channel north-eastward and northward of Hāji Salbuq is only available to boats.

With a strong out-going tidal stream, an eddy which must be guarded

Chart 3845.

against, is formed in the southernmost part of the curve in Al Khast reach, southward of Hāji Salbuq.

Kārūn bar.—**Lights.**—**Buoyage.**—This bar extends from about half a mile above Hārtheh point to just below the junction of Hafar channel with the main channel, about 3 miles northward. 5

The track across the bar varies considerably, especially at the beginning of the flood season, March or April, when very rapid alterations in the channel may be expected. As these alterations prevent the establishment of permanent leading marks, light-buoys, which are ¹⁰ moved as necessary, are employed to mark the channel.

Two lights are exhibited near the south-eastern extremity of Um al Khasasif or Dabbah island, about $2\frac{1}{2}$ miles above Hārtheh point.

At all times when the bar is in an unsettled condition a surveying vessel is stationed there to check the depths, and when necessary ¹⁵ a special pilot boards inward bound vessels in the vicinity of Hārtheh point to conduct them across the bar.

Numerous surveying marks are maintained on either bank of the river. Dabbah spit conical light-buoy, painted black, exhibiting a *red flashing light every two seconds*, marks the extremity of the spit, on ²⁰ the western side of the bar, extending south-eastward from Um al Rasas island (*Lat. 30° 25' N., Long. 48° 10' E.*), the south-eastern end of Um al Khasasif island, in a position about one mile below the mouth of Hafar channel.

Except in the flood season the least depth over the Kārūn bar is ²⁵ usually about 19 feet (5^m8), though in 1939 it was 15 feet (4^m6), in mid-channel about 9 cables south-eastward of the southern light structure near the south-eastern extremity of Um al Rasas island; a depth of 13 feet (4^m0) was also reported on the western side of the fairway about 16 cables south-south-eastward of the same light structure, and about $2\frac{1}{2}$ cables off the western bank of the river. ³⁰

Hafar channel.—**Khorramshahr.**—Hafar channel, usually known as the Kārūn, connects Shatt al 'Arab with that river, and, in 1935, had depths of from 15 to 21 feet (4^m6 to 6^m4). There is a conspicuous statue of H.I.M. Riza Khan, the late Shah of Persia, and a flagstaff ³⁵ close north-eastward of it, on the southern side of the entrance to the channel, also two jetties and the quarantine station.

There is a wharf on the northern side of the entrance besides the Custom house and British Consulate.

Khorramshahr, the principal port in Persia, stands on the northern ⁴⁰ side, and about half a mile within the entrance to Hafar channel, and in 1940, had a population of about 30,000; it is the seat of Government of the Governor of Khorramshahr. The town is reported to be comparatively cool and healthy.

The water in Hafar channel is purer and cooler than that of the ⁴⁵ Shatt al 'Arab; in summer a difference in temperature of 16° has been observed.

Boats can go alongside the landing jetty southward of the Anglo-Persian Oil Company's premises at Khorramshahr at any state of the tide and lighters can lie alongside the Custom house wharf. 50

Vessels whose draught permits them to do so may lie off the town close to the bank, but there is no room to swing, and ocean-going vessels usually anchor in the Shatt al 'Arab north-westward of the entrance of Hafar channel, cargo being worked by means of lighters. There is

Chart 3845.

an illuminated tide gauge on the north-eastern side of Um al Rasas island, westward of the entrance of Hafar channel.

The speed of vessels should not exceed 6 knots while passing
5 Khorramshahr.

Prohibited anchorage.—Anchorage in the entrance to and within Hafar channel, as indicated by pecked lines on the chart, is prohibited, owing to the existence of telegraph cables.

Trade.—The principal exports are dates, wool, gum and almonds ;
10 the chief imports are piece goods, glassware, cement, china ware, tea, sugar and building materials.

Harbour facilities.—Meat is fairly plentiful, but no bread is available.

Khorramshahr is connected to the general telegraph system.
15 **Consul.**—A British Consular officer is stationed at Khorramshahr.

Charts 3845, 3846.

Khorramshahr to Basra.—**Shoal.**—**Buoyage.**—On the southern side of the main channel between the entrance to Hafar channel and Basra, a distance of about 19 miles, are the islands of Um al Khasasif,
20 Um al Labani, Rumailah and Buljaniyah, and on the northern side are Ash Shamshamiya, At Tuwaila, and 'Agairawiya islands.

The channel follows the northern bank of the river to the western end of Um al Khasasif, where it passes through Satan's Gap (*Lat. 30° 27' N., Long. 48° 06' E.*), between that island and Ash Shamshamiya
25 island. It then skirts the southern sides of Ash Shamshamiya and At Tuwaila islands until about 2 miles above the western end of Buljaniyah island, whence it follows the southern bank of the river.

An obstruction, with a depth of 9 feet (2m7) over it, lies on the
30 north-eastern side of the channel, about half a mile above the entrance to Hafar channel.

The palace of the late Shaikh and Governor of Khorramshahr is situated on the northern bank of the river about 3 miles above the entrance of Hafar channel, and about a quarter of a mile farther upstream
35 is the mouth of Khaiyin canal. White pillars marking the boundary between 'Iraqi and Persian territory are situated on either side of the mouth of Khaiyin canal, whence the boundary trends northward so that above the canal both banks of the Shatt al 'Arab are in 'Iraqi territory.

40 Satan's Gap is a narrow pass ; the channel through it is marked on its northern side by a light-buoy, painted green and exhibiting a *white flashing* light, and on the southern side of the channel by a green can buoy.

The remains of a sunken wreck, over which there is a depth of
45 28½ feet (8m6), lies near the middle of Satan's Gap, and causes a large deflection of the compass when a vessel is passing over it ; when passing through Satan's Gap the vessel should, therefore, be steered by the land or conned until such time as the compass becomes steady.

Should vessels bound in opposite directions sight each other when
50 approaching Satan's Gap, the vessel stemming the current should reduce speed or stop until the other vessel has passed clear.

Chart 3846.

A 23-foot (7m0) patch is situated about 1½ cables north-north-westward of the western extremity of Buljaniyah island, and is marked

Charts 1235, 1265, 2837b, 748b.

Chart 3846.

close on its western side by a conical light-buoy, painted red, exhibiting a *red flashing* light *every six seconds*.

Two white mooring buoys for the use of ocean-going steamers, are situated off Sanger village, on the northern side of the channel about 5 miles above the western extremity of Buljaniyah island.

Basra.—The port of 'Iraq is Basra, situated on the south-western side of the Shatt al 'Arab in Basra reach, which latter trends north-north-westward from the north-western end of 'Ajairawiya island.

Basra city is a walled town about $1\frac{1}{2}$ miles up 'Ashār creek, which is 10 entered about one mile above the north-western extremity of 'Ajairawiya island. Outside the walls of the city are extensive suburbs, separated by gardens and date groves, which border both sides of the creek to its mouth ; the creek is spanned by several bridges.

The town of 'Ashār is situated on the river front on both sides of the 15 mouth of 'Ashār creek. The Custom house stands on the northern side of the mouth of the creek, and the British Consulate on the southern side.

Trade.—Shipping.—The principal exports are dates, grain, wool, hides and skins, cotton, sugar, liquorice roots and seeds ; the chief 20 imports are cotton piece goods, carpets, leather, sugar, tea, machinery, etc.

During the year 1936-37, 206 vessels of an aggregate gross registered tonnage of 1,095,410 tons entered Basra ; of these, 36 vessels of 25 198,527 gross registered tons were British.

Health.—The climate of Basra is considerably drier and more healthy than that of the Persian gulf, and the heat is less oppressive.

Consul.—British Consular officers are stationed at Basra (*Lat.* 30° 30' N., *Long.* 47° 50' E.).

Regulations.—Quarantine. Special regulations and quarantine 30 regulations are in force in the port of Basra and Khasrowabad harbour, see page 235. Masters of vessels should obtain a copy of the bye-laws on arrival.

Every vessel arriving at the port of Basra, except H.M. ships, shall be considered as in quarantine until the Port Health Officer 35 has boarded her and granted pratique ; and no person is to be allowed to board or leave the vessel, except the pilot and the Harbour Master, until such time as pratique has been granted. Mail steamers and oil tankers are inspected on arrival ; other vessels between sunrise and sunset only. Infected or suspected vessels must anchor below Khora 40 creek, opposite the north-western end of 'Ajairawiya island, for medical inspection.

There is a civil hospital at Basra, also an isolation hospital.

For deratization, see page 16.

Ma'qil.—Ma'qil, the shipping centre of Basra, is situated about 45 3 miles above the entrance to 'Ashār creek and on the same side of the river. The Port Directorate headquarters are situated in rear of No. 5 wharf.

The port signal station is at the south-eastern end of Ma'qil, about 2½ miles above the entrance to 'Ashār creek.

Wharves.—Mooring-buoys.—Anchorage.—Directions.—There 50 are 12 wharves at Ma'qil ; "A" wharf is the farthest up-stream, the remainder are numbered consecutively from upstream downwards, and are connected to the railway system. Nos. 1 to 6, which have

Chart 3846.

depths of 25 feet (7^m6) alongside, can accommodate large vessels and are equipped with cranes. There are no bollards on these wharves, but they are provided with wire eyes to which the vessel's hawsers can be attached. There are depths of from 10 to 15 feet (3^m0 to 4^m6) alongside Nos. 7 to 11 berths. There are also four temporary berths for ocean-going vessels, and special wharves are reserved for the handling of petrol, fuel oil, and kerosine.

There are several mooring buoys in this reach of the river.

10 A vessel arriving at Basra bound for the wharves will be boarded by a Harbour Master off Jubailah creek, about 2 miles above the entrance to 'Ashār creek; those bound for a buoy or mooring in the stream will be boarded below Khora creek, and should anchor to await the arrival of the Harbour Master if necessary.

15 A vessel arriving at Basra, bound for Ma'qil wharves, and not having dangerous cargo on board will be boarded by the Harbour Master below Jubailah. A ball displayed at the port signal station will indicate that the Harbour Master is on his way to board the vessel; if a cone is displayed instead of a ball, the vessel should anchor to await his arrival.

Vessels bound for Abādān will be boarded by a Harbour Master outside the harbour limits. The same ball and cone signals will be displayed for this purpose from the signal station on board the control vessel, as at Basra.

20 All vessels of more than 200 tons gross measurement, when anchoring, are required to moor with two bower anchors and 60 fathoms (109^m7) of chain cable on each. The anchors are laid up and down the river.

Anchorage is prohibited in the area indicated by pecked lines on the chart, about one mile above the mouth of 'Ashār creek.

Harbour facilities.—Stocks of coal are maintained. Coaling may be carried out alongside at Ma'qil (*Lat.* 30° 33' N., *Long.* 47° 49' E.), or from lighters at the anchorage, two days notice being required. Fuel oil can be obtained alongside, or from lighters.

35 Fresh provisions may be obtained. Fresh water is supplied from 100-ton lighters, on two days notice being given.

Small repairs to vessels can be effected. There are some sheer-legs with a lifting capacity of 80 tons, and a floating crane of 30 tons. There is a patent slip at 'Ashār, details of which are given in Appendix I.

40 **Communications.**—There is regular steamer communication with Bombay and ports in the Persian gulf.

Basra is connected to the general telegraph and telephone systems.

There is regular communication by air with England and India, and thence to Australia.

45 **W/T station.**—There is a W/T station at Ma'qil. See page 17.

Tidal streams.—The rate of the tidal streams at Basra varies with the seasons of the year. During the flood season, from February to June, the out-going stream, accelerated by the freshets due to the melting of the snow in the mountains, may attain a rate of 4 knots.

50 During the dry season, from September to December, the rate of the out-going stream varies between 2 and 3 knots, and that of the in-going stream from one to 2 knots.

Observations made by H.M. Ships *Espiegle*, *Cyclamen*, and *Folkestone*, between the years 1922 and 1931, show that the in-going tidal stream

Chart 3846.

at Basra makes about 3h. 23m. before the time of high water there or about 1h. 07m. after the time of high water at the bar of the Shatt al 'Arab, and that the ebb tidal stream begins about 1h. 40m. after the time of high water at Basra or about 6h. 10m. after the time of high water at the bar of the Shatt al 'Arab. These times are subject, however, to seasonal and other variations, that of the commencement of the in-going tidal stream preceding the lower high water being considerable, and amounting to as much as $1\frac{1}{2}$ hours on either side of the average. Slack water would appear to be of short duration. 10

Tide-gauge.—There is a tide-gauge a short distance south-eastward of No. 6 wharf, Ma'qil, and an automatic tide-gauge at "A" wharf. *Charts 3846, 1265.*

Basra to Al Qurna.—The Shatt al 'Arab is navigable by vessels with a draught of 15 feet (4 m 6) as far as Al Qurna, situated about 15 40 miles above Basra, at the confluence of the Tigris and Euphrates.

A spit, with a depth of 11 feet (3 m 4) at its outer end, extends about half a mile south-eastward from the south-eastern extremity of Coal island, situated in the middle of the river, about 4 $\frac{1}{2}$ cables north-north-westward of the north-westernmost wharf at Ma'qil. A black conical 20 buoy is moored on this spit, about 3 cables from the south-eastern extremity of Coal island. North island (*Lat. 30° 35' N., Long. 47° 46' E.*) lies about 2 $\frac{1}{2}$ cables north-westward of Coal island. The deeper channel lies north-eastward of these islands. 25

Chart 3847.

The water from Hammar lake flows out through Qarmat 'Ali (see page 255), into the Shatt al 'Arab abreast the gap between Coal and North islands; flowing from westward, it is comparatively deep for the last few miles. Telegraph wires are suspended across the mouth of Qarmat 'Ali at a height of about 70 feet (21 m 3). 30

The western bank of the Shatt al 'Arab, both above and below Qarmat 'Ali, is bordered with conspicuous brick kilns.

About 5 miles northward of the northern extremity of North island, the Katiabān (Kutaiban) canal enters the eastern side of Shatt al 'Arab, and is reported to connect with Kārūn river. The eastern bank of 35 Shatt al 'Arab between Basra and the canal is bordered with date groves. Northward of the canal is an open sandy desert, and the western bank has a thin fringe of date palms, beyond which is also desert which is sometimes flooded.

About 2 miles northward of the entrance to the canal, the river turns 40 north-westward, with general depths of 4 fathoms (7 m 3) near its north-eastern bank; near the south-western bank it is shoal for the first 2 miles, after which it is steep-to on that side, with greater depths close to a prominent point, above which vessels should keep to the south-western side of the river. Nahr 'Umr is situated in this reach on the 45 south-western bank of the river, about 10 miles above Qarmat 'Ali.

For the next 17 miles there is no difficulty in the navigation. Shāfi creek, with five brick kilns at its entrance, is conspicuous on the western bank, about 12 $\frac{1}{2}$ miles above Nahr 'Umr, which bank, northward of 50 this, is open plain.

About 1 $\frac{1}{2}$ miles northward of Shāfi creek there are depths of less than 2 fathoms (3 m 7), but farther northward they increase to 3 $\frac{1}{2}$ fathoms (6 m 4), and about 3 miles northward of the creek the river narrows,

Charts 1235, 1265, 2837b, 748b.

Chart 3847.

and the western bank, which is thickly bordered with date palms, is steep-to, with depths of 4 fathoms ($7^{\text{m}}3$) close alongside.

Shuwaiyib river flows in on the eastern side, where the Shatt al 'Arab is narrowest, about 8 miles above Shāfi creek ; for the first 12 miles it has depths of 2 or 3 fathoms ($3^{\text{m}}7$ or $5^{\text{m}}5$) and is tortuous, but it is too narrow for any vessel larger than a steam launch.

Chart 3847, plan of Qurna reach and bar.

At Odin point, on the western bank close northward of the entrance to Shuwaiyib river, the Shatt al 'Arab widens into Qurna reach and forms the bar of the combined Tigris and Euphrates. The greatest depths are close along the north-eastern bank, where the channel is very narrow, with a least depth of 7 feet ($2^{\text{m}}1$) in the fairway. After passing the bar the river narrows again and the depths increase to about 8 fathoms ($11^{\text{m}}0$) at the junction of the rivers. Between Basra and Al Qurna the bottom is everywhere mud.

Al Qurna is a small town situated on the point formed by the junction of the Tigris and Euphrates rivers. It is connected to the general telegraph system.

20 Chart 2483.

TIGRIS RIVER.—General remarks.—This great river originates in Turkish territory in two head streams which unite about 70 miles from the northern frontier of Iraq. The united stream flows south-south-eastward past Mōsul, Baijī, Sāmarrā, and Baghdād, whence it trends south-eastward, and past Kūt al Imāra and 'Amāra to its junction with the Euphrates at Al Qurna (*Lat. 31° 00' N., Long. 47° 26' E.*). The total length of the river is about 1,150 miles. See distance table on page 240.

The effect of the tide is felt for about 30 miles above Al Qurna, but the current always runs downstream. Masters of river steamers running to Baghdad, etc., prior to 1898, reported that it was practicable to take vessels of about 10 feet ($3^{\text{m}}0$) draught for a distance of about 60 miles above Al Qurna, and of 9 feet ($2^{\text{m}}7$) draught, 90 miles farther. In the high river season a draught of 4 feet 6 inches ($1^{\text{m}}4$) is usual, but in the low river season a draught of 3 feet 3 inches ($1^{\text{m}}0$) should not be exceeded. A vessel with a draught of 3 feet ($0^{\text{m}}9$) has reached the Great Bund, 28 miles below Mōsul, which is about 200 miles in a direct line north-north-westward of Baghdad.

Charts 3847, 2483.

40 The river is narrow, and difficult to navigate, on account of its numerous bends. The depths are from 2 to 4 fathoms ($3^{\text{m}}7$ to $7^{\text{m}}3$) for the first 10 miles from Al Qurna, but the current is strong. The river is nowhere wide enough in which to turn round. In most cases, when vessels meet, one has to bank in to allow the other to pass.

45 Chart 2483.

Rises in the river are caused by rain and melting snow. These rises usually commence about the middle of November ; the first rises invariably fall again very rapidly, a fall of 5 feet ($1^{\text{m}}5$) during a night has often been experienced in the upper reaches, but by the end of December the river is usually full. After the second "rain-rise" the river continues good during the remainder of the winter months.

The rises due to snow start in early March, and by the end of that month or early in April the river is in full flood ; about the middle of

Chart 2483.

April, rises from this cause cease, but a rise may occur owing to late rains. In May, the river commences to fall, and great care must be taken in navigating it, as the channels are not then formed; when the scour of the river has formed the channels, navigation becomes easier.

In June, the depths are greater, but the channels must be carefully adhered to; in July, the channels are apt to be most erratic, and in August, they begin to form; in September, the river reaches its lowest level, and during this month steamers have made their worst passages; in October, at the first snap of cold or cooler weather, the sand banks appear to harden and the channels scour out several inches deeper.

Navigation in the Tigris varies with each season of the year, and as each year in itself varies, no hard and fast rules can be laid down. In a good or favourable year the "rain-rises" come regularly, and though the level may at times fall slightly, the river is always gaining. In bad years, the river perhaps falling later, a very high rise amounting to anything up to 12 feet (3^m7) at Baghdād, may come at any time in December or January; occasionally, however, the river falls almost to its lowest (summer) level.

A rise in the river is naturally felt later towards its lower reaches. A rise at Mashu takes some three days to reach Baghdād, and about the same time to travel to Al Qurna (*Lat. 31° 00' N., Long. 47° 26' E.*).

Floods occasionally occur. Usually the rise above normal river level is about 2 feet (0^m6), but 8 feet (2^m4) has been observed at Baghdād. A very heavy rainfall in January, 1896, caused the river to rise 8 feet (2^m4) in one night, with the result that the embankments were broken down, and a sea was formed round Baghdād, about 25 miles in length and about 6 miles wide. The water rose to a higher level than the city, which is, however, surrounded by a glacis. There was also a great inundation in April, 1894, and another in March, 1923.

During low river, occasional groundings are almost impossible to avoid, and local pilots are employed. In general, the greatest depths are obtained on the outside of the bends, but this is not invariably the case.

As the level of the river falls, the channels often change, so that in certain sections local pilots should be engaged. Pilots can usually be obtained at Basra, 'Amāra, 'Ali Gharbi, Kūt al Imāra, Bghaila, Al 'Aziziya, and Baghdād.

The nature of the river bottom between Basra and Baghdād is mud, and no rocks are found between these places. Ships taking the ground can usually haul off by laying out anchors. The tendency of the current is to quickly wash away the mud on the up-stream side of a vessel, and to form a bank on the other, which sometimes rises above the water in three or four hours.

During April and May, sudden squalls, known as "guttras," are frequent, often necessitating the furling of awnings, etc.; these squalls are experienced most frequently in the neighbourhood of 'Ali Sharqī and all small craft must make fast while they are blowing.

Al Qurna to 'Amāra.—From Al Qurna to 'Amāra the general depth is about 13 feet (4^m0) at high river and 6 feet (1^m8) at low.

Between Al 'Azair or Ezra's tomb and Al Qurna, the river is marked by black posts on the right bank and white poles on the left, to denote the course of the river when the banks are covered during floods. The

Chart 2483.

river between Al 'Azair, Al Qurna and Sarifah is always good, but there are some bad bends, the worst being at Humaiyān, and the southern bend of Majrum reach.

5 The section Ghumaiqa Shargi to Abū Rūba is the worst part of The Narrows (*see below*). In the low river season this reach is extremely difficult, owing to the narrow and tortuous course of the channel combined with the very strong current. Great care must be taken to avoid grounding on the spits which extend a considerable distance at the
 10 worst bends. From Abū Rūba to Qal'a Sālih, with the exception of Nufaikh reach, the river is good, though narrow.

The channels, mentioned below, deprive the Tigris of a large amount of water, which causes the river to narrow below Qal'a Sālih to a width of about 60 or 70 yards (54^m9 to 64^m0), forming that section of the river
 15 referred to above as The Narrows, that is to say, the Jahala canal on the left bank of the river at 'Amāra; the Majar canal, about 2 miles above Abu Sidra, on the right bank; and the Michriyah canal, now partly dammed, about one mile above Qal'a Sālih, on the left bank. The worst reach in the Qal'a Sālih to 'Amāra section is the Müzāniya
 20 reach, about 4 miles above Qal'a Sālih; with the exception of this reach the river is generally good throughout the year. Since 1928, the Narrows have become more difficult to navigate owing to the action of the regulator at Majar canal, situated about half-way between Qal'a Sālih and 'Amāra (*Lat.* 31° 48' *N.*, *Long.* 47° 15' *E.*). This
 25 regulator, when opened, admits water to the Majar canal and causes the level in the Narrows to drop from 10 to 18 inches (254^{mm} to 457^{mm}); it has also caused a considerable amount of silt to be deposited in this section of the river.

'Amāra to Baghdād.—Navigation presents no difficulty to
 30 vessels of suitable draught in that section of the river between 'Amāra and Kūt al Imāra. The width, generally, is about 1½ cables, with a depth of 26 feet (7^m9) at high river, and 6 feet (1^m8) at low.

Between 'Amāra and Saiyid 'Ali canal a good depth is found all the year round. From the canal to Ali Gharbī there is a good depth nearly
 35 all the year round, but soundings should be taken continuously in this section.

During the low river season there are three bad reaches in the section between 'Ali Gharbī and Shaikh Sa'ad, viz., Said 'Abbās, Mandaliya, and Abud Dūd. The channels in these reaches are very
 40 liable to change. As vessels approaching the sharp bend at the bottom of Mandaliya reach are unable to see one another, caution should be exercised.

Kūt Camp is about 36 miles above Shaikh Sa'ad and the river between them is navigable all the year round; with care no difficulties
 45 should be experienced.

At Kūt al Imāra, the Hai branch, the ancient Tigris, leaves the right bank of the river.

From Kūt al Imāra to Baghdād, is the most difficult part of the river, and there are many shoals. The width of the river, generally,
 50 is from 300 to 400 yards (274^m3 to 365^m8), with a depth of 26 feet (7^m9) at high, and 6 feet (1^m8) at low river. It is essential to carry a pilot with local knowledge.

Baghdād.—This famous city, situated about 460 miles above Basra, stands on both sides of the Tigris. Two boat bridges cross the

Chart 2483.

river at Baghdād. The population is about 140,000, and supplies are plentiful.

Baghdād is connected by railway to Basra. There is regular steamer communication with Basra. 5

There is communication by air with England and India and thence to Australia.

Above Baghdad small steamers can reach Sāmarrā.

EUPHRATES RIVER.—This river rises in the mountains of Armenia and flows southward into Syria and thence to its junction 10 with the Tigris, its total length being about 1,600 miles.

The difference between the Euphrates and the Tigris is very marked ; whereas the latter has a current of from 3 to 4 knots the Euphrates has little, if any. The difference in appearance is also very marked at Al Qurna (*Lat. 31° 00' N., Long. 47° 28' E.*), the water of the Tigris 15 being muddy and chocolate in colour, while that of the Euphrates is very dark but comparatively clear. The Tigris water is said, however, to be the more wholesome of the two. *See* distance table on page 240.

Chart 3847.

From Al Qurna the main channel of the Euphrates trends west-20 south-westward, with depths of 2 fathoms ($3^{\text{m}}7$) for a short distance, but it soon deepens to 3 or 4 fathoms ($5^{\text{m}}5$ or $7^{\text{m}}3$), and for the first 20 miles presents no difficulty to a vessel with a draught of 12 feet ($3^{\text{m}}7$). Beginning about 7 miles from Al Qurna, there is a great U-shaped bend, which, however, is not sharp ; its concave side is 25 always deep.

After ascending for about 20 miles, the depths gradually shoal to 2 fathoms ($3^{\text{m}}7$) about $2\frac{1}{4}$ miles below the large village of Kabāish ; thence they decrease to 9 feet, ($2^{\text{m}}7$) before reaching the village, the greatest depths being close to the northern bank. At the village 30 itself, there are depths of from 12 to 18 feet ($3^{\text{m}}7$ to $5^{\text{m}}5$). Vessels with a draught of 4 feet ($1^{\text{m}}2$) can reach the entrance of Hammar lake, about 6 miles above Kabāish, but the depth in the lake is only 2 or 3 feet ($0^{\text{m}}6$ or $0^{\text{m}}9$). The bottom is everywhere very soft mud.

Hammar lake has another outlet in Qarmat 'Ali, *see* page 251. 35

Chart 1235.

BAHMISHIR RIVER.—Bahmishir (Bahmanshir) river is approached through Khōr al Amaya (page 239) across the flats, between Maraqqat Ābādān and Maidān 'Ali, over which the least depth for a distance of about 5 miles would appear to be from 3 to 4 feet ($0^{\text{m}}9$ to 40 $1^{\text{m}}2$). The channel is not marked, and the banks on either side of it do not dry until nearly 4 miles of shoals have been crossed. At the mouth of the river there is a depth of 8 feet ($2^{\text{m}}4$) and within it the depths increase to as much as 33 feet ($10^{\text{m}}1$) in one place, though higher up there are no less than five bars, over which the depth on 45 the three upper bars is not greater than one foot ($0^{\text{m}}3$).

Bahmishir river is about 42 miles in length from its mouth to Khorramshahr at its junction with the Kārūn river and could apparently be ascended for a distance of about 28 miles by vessels with a draught of 7 feet ($2^{\text{m}}1$). There are two large bends near the middle 50 of its course, the first commencing about $8\frac{1}{4}$ miles above the mouth of the river. The banks of the river near its mouth are of soft mud,

Charts 1265, 2837b, 748b.

Chart 1235.

sloping down to the water's edge and covered with coarse grass above high-water mark ; a few miles above its mouth the banks are steeper and harder. About 22 miles from the mouth of the river, villages and 5 date gardens commence to border the banks and continue thence almost uninterruptedly to the junction with the Kārūn river. The northern part of the river, for about 15 miles, is very shallow and the depths are irregular, some of the mud banks drying almost across the channel.

As there are no pilots for the Bahmishir river, vessels desiring to 10 enter should endeavour to obtain the services of a bāgala man, who is acquainted with it ; if obliged to enter without local knowledge, it is advisable to start on a rising tide. Within the entrance the greatest depths are close to the bank on the concave side of each bend, and vessels should cross over at the commencement of each change in the 15 direction of the river.

Chart 1235, plans of Karun river.

KĀRŪN RIVER.—General remarks.—This, the largest of the rivers of Persia and the only one navigable by steam vessels, takes its rise in the mountains of the Bakhtiāri country, about 100 miles 20 westward of Isfahān, and after flowing for a considerable distance south-eastward, south-westward and then north-westward, enters the plains of 'Arabistān about 15 or 20 miles northward of Shūshtar, nearly 120 miles north-north-eastward of Khorramshahr.

See distance table on page 240.

25 The Kārūn is navigable by river steamers of 2 feet ($0^{\text{m}}6$) draught at any time, and of 5 feet ($1^{\text{m}}5$) draught when the river is high. It is from 2 to 5 cables wide, and the channel is very narrow in places, especially at the bends, where, as usual, the greatest depths are, in most cases, on the concave side. Sand banks extend from most of the 30 points, sometimes half-way across the river. Vessels of 12 feet ($3^{\text{m}}7$) draught can reach Samana bend, 14 miles above Khorramshahr (*Lat. 30° 26' N., Long. 48° 11' E.*), but off the point there, the channel is narrow and the bend very sharp.

The best months for navigating the river are from December to 35 May or June, when it is in spate either from heavy rain or melting snow.

The river is reported to rise sometimes as much as 20 feet ($6^{\text{m}}1$) or more between January and March due to very heavy rains up country ; but such rises subside so quickly that advantage cannot be taken of them for navigational purposes. The rate of the stream in a high 40 river is from 4 to 6 knots, and in a low river about 2 knots. There is least water from August to the first rain, when, for 20 miles below Aliwāz, the navigation is difficult for a steamer of $2\frac{1}{2}$ feet ($0^{\text{m}}8$) draught. The tide is felt as far as 'Ali-ibn-al-Husain's (Ali-bin Husain's) tomb, 30 miles above the entrance.

45 **Khorramshahr to Ahwāz.**—The Kārūn river enters the eastern end of the Hafar channel (page 247), the main volume of its water flowing through that channel into the Shatt al 'Arab, the remainder turning south-eastward into the Bahmishir river. From Khorramshahr to Aliwāz, the course of the river is tortuous between low 50 banks, through an almost desert country, but abounding with a great variety of wild fowl. The first vegetation is above Rūbin-bin-Ya'qūb (Reuben's) tomb, 16 miles north-north-eastward of Khorramshahr, whence the banks become fringed with light scrub, the country being extensive plains.

Charts 1265, 2837b, 748b.

Chart 1235, plans of Karun river.

Fārsiāt village is on the south-eastern bank, about 65 miles above the entrance; about 2 miles below it, and extending about 30 feet ($9^{\text{m}1}$) from the opposite side of the river, is a rock, which dries.

As far as Kūt 'Abdullah, a village on the south-eastern side of the river, about 37 miles above Fārsiāt village, the bottom is mostly sand, or sand and mud, and, with the above exception, is free from rocks.

Off Kūt 'Abdullah are some rocks, probably the remains of old buildings, with a depth of about 3 feet ($0^{\text{m}9}$) over them. From this village for a distance of about 6 miles, the river is much encumbered with ¹⁰ sand banks and subject to constantly changing channels. At times the reach has to be bandalled (a method of river training by means of reeds and mats), to ensure sufficient depth for the passage of barges loaded to a draught of $2\frac{1}{2}$ feet ($0^{\text{m}7}$). The limit of navigation from seaward lies one mile below Ahwāz, and between this limit and Ahwāz ¹⁵ there is a great rise in the river bed and a series of heavy, almost impassable rapids, followed by a navigable stream above the rapids. Near the limit of navigation from seaward there is a small natural basin, where vessels unload.

Ahwāz.—Consul.—Ahwāz (*Lat. 31° 29' N., Long. 48° 43' E.*) is ²⁰ a modern town with a population, in 1940, of about 30,000, and is the centre of the grain district; it is reported to be 200 feet ($61^{\text{m}0}$) above sea level. A range of hills, about 220 feet ($67^{\text{m}1}$) above the surrounding plain, marks the position of the town; three small peaks lie close together, the highest, with an elevation of 420 feet ($128^{\text{m}0}$), ²⁵ being about 2 miles south-eastward of the town.

A British Consular officer is stationed at Ahwāz.

Chart 2483.

Ahwāz to Shūshtar.—The river, above the rapids, is sinuous, from one to 3 cables wide, and flows between banks from ¹⁵ to 20 feet ³⁰ ($4^{\text{m}6}$ to $6^{\text{m}1}$) high, which gradually become steeper near Band-i-Qīr. The country on each side of the river is extensive plains.

In general, the navigation of the upper river is more difficult than that of the lower; but, with the possible exception of the 2-foot ($0^{\text{m}6}$) reach above Band-i-Qīr, there is no part which cannot be negotiated ³⁵ with safety during the hours of darkness provided searchlights are fitted, and greater use made of buoys and navigational aids.

Between Ahwāz and Graneh, situated 2 or 3 miles up river, navigation is simple after clearing the islets immediately above the former. At Graneh, a few patches of stone have to be negotiated, and caution ⁴⁰ is necessary, thence to Kut Saiyid Amaieh, a distance of about 7 miles, progress becomes slower, but most of the shoals are visible and navigation is not difficult. From Kut Saiyid Amaieh to Wais, a distance of about 15 miles, the banks and shoals become more numerous, and a few groundings may be expected. Wais is a large village situated ⁴⁵ at the southern end of a long reach. Thence to Band-i-Qīr there is a straight reach in which it is reported that there are only two bad places, where the river bed is of stone, namely at Helowdella and Bait Senafie. At Band-i-Qīr, the river divides into three branches, named Ab-i-Gargar, Ab-i-Shatait and Ab-i-Diz; the first two re-uniting ⁵⁰ above Shūshtar and resuming the name of Kārūn river.

At Band-i-Qīr, vessels bound for Shūshtar enter the Ab-i-Gargar, the eastern branch, as the Ab-i-Shatait, the middle branch, is completely barred about one mile above Band-i-Qīr by a ridge of rocks,

Chart 2483.

which renders it impassable to a steam vessel, and nearly so to native boats. A bridge spans the river at Band-i-Qir, but it can be opened to allow the passage of the river craft. At Band-i-Qir the stream is 5 from a quarter to half a cable wide, with general depths of from 3 to 6 feet (0^m9 to 1^m8) ; under the telegraph wires there, a rocky ridge leaves a very narrow channel, barely permitting the passage of the steamers.

10 *Kyat peak*, a triangular-shaped summit of the nearest range of hills, is an excellent mark.

The banks of the river in this locality are from 30 to 40 feet (9^m1 to 12^m2) high, and a few miles above Band-i-Qir, the remains of an old ruined city are discernible, embedded in the cliff. The reach between Band-i-Qir and Saiyid Hassan, about $6\frac{1}{2}$ miles up stream, is 15 the most difficult of all, because of the narrowness of the channel and the depth available. The stern-wheelers and barges are frequently aground, or else strike the banks every few minutes. Above Saiyid Hassan, conditions improve, but progress is slow as far as Dar-i-Khazineh, a distance of about 15 miles. The steamers stop abreast of 20 Shalailiyeh village, which lies about 2 miles from the river bank 8 miles below Shushtar. A short distance farther up, navigation ceases.

Shushtar (*Lat. $31^{\circ} 48' N.$, Long. $49^{\circ} 00' E.$*) is a large town with about 10,000 inhabitants ; it is the seat of the Governor of 'Arabistān.

Ab-i-Diz.—In August, 1891, the s.s. *Shushan*, a stern wheeler, 25 80 feet (24^m4) long, 30 feet (9^m1) beam, and $2\frac{1}{2}$ feet (0^m8) draught, ascended the Ab-i-Diz, which, starting from Band-i-Qir, follows a very tortuous course through flat uncultivated country and vast jungle as far as Kut 'Abdush Shah. Entering by a channel 20 yards (18^m3) wide, the vessel proceeded for $1\frac{1}{2}$ hours through a winding channel, 30 with a depth of 3 feet (0^m9) ; it then deepened to an average of 9 feet (2^m7), except where barred by long sand banks about every 5 miles ; in the crossings there were depths of 3 feet (0^m9).

On the third day, the *Shushan* arrived at Kūt Bandar. At this place a reef of rocks extends across the river, through which there is 35 a straight channel with a depth of 4 feet (1^m2). Thence passing through intricate channels, she arrived at Umm 'al Wawieh, about 10 miles beyond Kūt Bandar.

Not being able to proceed farther, the return journey was commenced on the following day, and much difficulty was experienced 40 through grounding and striking in the bends. The ascent occupied 51 hours and the descent 36 hours.

During spring and winter, the Ab-i-Diz can be navigated as far as Kut 'Abdush Shah, about 80 miles by river, and a farther 10 miles by road, from Dizful, a town of about 15,000 inhabitants.

45 **Communications.**—There is regular steamer communication between Khorramshahr and Ahwāz.

Dizful and Shushtar are connected to the general telegraph system.

Charts 1265, 2837b.

APPENDIX I

LIST OF PORTS AVAILABLE FOR UNDER-WATER REPAIRS, with details of largest Dry or Floating Dock or Patent Slip at each Port.

NAME OF PORT AND DOCK.	Coping Head (1)*	Floor Head (2)*	Breadth of Entrance at (3)†	Depth at M.H.W.S. (4)†	FLOATING DOCKS, PATENT SLIPS, &c.				REMARKS			
					Sill (5)	Blocks at Entrance (6)	Springs rise (7)	Maximum Depth over Blocks		Lifting Power (11)	Date built (12)	(13)
								Forward (8)	Aft (10)			
Ābādān	194	172½	—	44½ (clear)	—	—	—	6½	12½	750	1928	Floating dock.
‘Ashār (Basra) No. 1	400	180	21	—	—	—	—	—	7	8	750	—

* In the case of Floating Docks, Patent Slips, etc., Column (1) = Extreme Length. Column (2) = Length on Blocks or Cradle.

† In the case of Floating Docks, Column (3) = Breadth at Top. Column (4) = Breadth at bottom of Dock.

APPENDIX II

LIST OF PRINCIPAL PORTS, showing particulars of depths, &c.

Port.	Depth below Chart datum level.		Rise of Tide.		REMARKS.
	In approach.	At anchorage.	Spgs.	Nps.	
Muscat . . .	Deep	5 to 10 fms.	Feet. 7·7	Feet. 6·2	
Jāk bay . . .	3½ fms.	3½ to 4½ fms.	9·0	—	
Bandar 'Abbās .	8 to 5 fms.	3½ to 4 fms.	11·2	8·5	
Henjām sound .	5½ fms.	7 to 9 fms.	8·5	6·5	In Bandar Gharbi.
Lingeh . . .	6 fms.	5 fms.	7·5	—	
Bushire, outer .	Deep	4½ to 5 fms.	6·0	5·0	
" inner . .	2½ fms.	3½ to 3½ fms.	6·0	5·0	
Bahrein :—					
Outer harbour .	22 feet	4 to 5 fms.	6·8	5·4	
Inner harbour .	16 feet	13 to 17 feet	6·8	5·4	
Kuwait harbour :—					
Off Kuwait, outer .	8 fms.	7 to 9 fms.	11·5	8·0	
" inner .	5 to 6 fms.	3½ to 5½ fms.	11·5	8·0	
Bandar ash Shuwaik	1½ fms.	4 to 6 fms.	11·5	8·0	
Dōhat Kādhima .	4½ to 5 fms.	5 to 6 fms.	11·5	8·0	
Khōr Müsa . . .	24 feet on bar in 1939	5 to 15 fms.	11·5	9·5	31 feet alongside wharf at Bandar Shāpūr in 1941.
Ābādān . . .	23 feet in Rooka channel in November, 1938.	No anchorage.	6·8	—	Ocean - going steam vessels can berth at oil wharves.
Basra . . .	15 feet on Kārtūn bar in 1939, usually 19 feet.	6½ to 7½ fms.	8·2	7·5	25 feet alongside wharves at Ma'qil.

APPENDIX III

SPOTS SUITABLE FOR MAGNETIC OBSERVATIONS

Reliable magnetic observations have been made at the following places, which should, whenever possible, be re-occupied when making future observations.

Place.	Lat. N.	Long. E.	Position.
JASK . . .	25° 38'	57° 46'	Westward of a block of telegraph buildings and nearly in line with the northern wall of the telegraph office; 287 feet from the main astronomical pier in front of the telegraph office, 137 feet from the nearer edge of the broad walk leading from the Superintendent's house to the sea; marked by a copper nail in the top of a sandstone post with a cement cap, 6 x 6 x 24 inches, projecting about 2 inches out of the ground. The cross on a conspicuous white monument near the end of the cape 207° 29'; the beacon marking the anchorage ground eastward of the telegraph cables, 113° 27'.
JAZIRAT HENJAM .	26° 41 $\frac{1}{2}$ '	55° 53 $\frac{1}{2}$ '	North-western end of the island, in the middle of a sandy beach. Spit beacon bears 193°, distant 66 yards.
LINGEH . . .	26° 33'	54° 54'	In the central part of the town, in the garden of the native British Agent, filled with low palm trees; 132, 83, 181, and 104 feet from the north, east, south, and west walls, respectively; marked by a copper nail in the top of a plaster and sandstone post, 7 inches square, projecting 2 or 3 inches above the ground. A minaret bears 325° 20', distant about 400 yards.
RISHAHR . . .	28° 54'	50° 50'	In an open field directly southward of the telegraph office, 31 feet westward of a path crossing the field, and 117 feet southward of an iron fence bounding the telegraph property. The flagstaff of the British Residency bears 126° 31', distant about one mile.
BUSHIRE . . .	28° 59'	50° 49'	On the open ground in front of the British Consulate; on the hockey ground, in line with the northern wall of the Consulate, 138 feet from the north-western corner of the Consulate, and 58 feet from the sea wall.
BAHREIN . . .	26° 13' 52"	50° 31' 18"	Spot 50 yards northward of the Portuguese fort, situated 3 miles westward of the Customs pier at Manâma. Sultan's flagstaff bears 272° 49' 25".

K

Place.	Lat. N.	Long. E.	Position.
KHORRAMSHAHR	30° 25'	48° 08'	<p>On a plot of ground in front of the Quarantine station on the southern side of the Kärün river, about one-quarter of a mile from its junction with the Shatt al 'Arab and one mile below the town of Khorramshahr.</p> <p>Station A is 48 feet in front of the western side of the main entrance of Quarantine house. The base of the flagstaff on the Custom house bears 278° 12'.</p> <p>Station B is 46 feet in front of the western wing of Quarantine house. The flag pole on the jetty at the junction of the two rivers bears 088° 53'.</p> <p>Both stations are about 30 feet from the raised path along the river.</p>

APPENDIX IV

TIDAL STREAMS.

TABLE I.—Little Quoin island lighthouse, bearing 225° , distant 9.4 miles.
(Lat. $28^{\circ} 35' 24''$ N., Long. $56^{\circ} 39' 30''$ E.)

Q-hours .	12b	11b	10b	9b	8b	7b	6b	5b	4b	3b	2b	1b	H.H.W.
S-hours .	$\frac{1}{2}b$	$\frac{1}{2}a$	$1\frac{1}{2}a$	$2\frac{1}{2}a$	$3\frac{1}{2}a$	$4\frac{1}{2}a$	$5\frac{1}{2}a$	$6\frac{1}{2}a$	$7\frac{1}{2}a$	$8\frac{1}{2}a$	$9\frac{1}{2}a$	$10\frac{1}{2}a$	$11\frac{1}{2}a$
Constituent .	kn.												
SD—N.S. .	$+\frac{1}{2}$ 0.3	$+\frac{1}{2}$ 0.2	0.0	$-\frac{1}{2}$ 0.1	$-\frac{1}{2}$ 0.2	$-\frac{1}{2}$ 0.3	$-\frac{1}{2}$ 0.3	$-\frac{1}{2}$ 0.2	$-\frac{1}{2}$ 0.1	$+\frac{1}{2}$ 0.1	$+\frac{1}{2}$ 0.2	$+\frac{1}{2}$ 0.3	$+\frac{1}{2}$ 0.3
D—N.S. .	$-\frac{1}{2}$ 0.2	$-\frac{1}{2}$ 0.1	$-\frac{1}{2}$ 0.1	0.0	$+\frac{1}{2}$ 0.1	$+\frac{1}{2}$ 0.1	$+\frac{1}{2}$ 0.2	$+\frac{1}{2}$ 0.2	$+\frac{1}{2}$ 0.3	$+\frac{1}{2}$ 0.3	$+\frac{1}{2}$ 0.2	$+\frac{1}{2}$ 0.2	$+\frac{1}{2}$ 0.2
SD—E.W. .	$-\frac{1}{2}$ 0.2	$-\frac{1}{2}$ 0.3	$-\frac{1}{2}$ 0.3	$-\frac{1}{2}$ 0.2	$-\frac{1}{2}$ 0.1	$+\frac{1}{2}$ 0.1	$+\frac{1}{2}$ 0.2	$+\frac{1}{2}$ 0.3	$+\frac{1}{2}$ 0.3	$+\frac{1}{2}$ 0.2	$+\frac{1}{2}$ 0.1	$+\frac{1}{2}$ 0.0	$-\frac{1}{2}$ 0.2
D—E.W. .	$+\frac{1}{2}$ 0.5	$+\frac{1}{2}$ 0.3	$+\frac{1}{2}$ 0.1	$-\frac{1}{2}$ 0.2	$-\frac{1}{2}$ 0.4	$-\frac{1}{2}$ 0.5	$-\frac{1}{2}$ 0.7	$-\frac{1}{2}$ 0.8	$-\frac{1}{2}$ 0.9	$-\frac{1}{2}$ 0.9	$-\frac{1}{2}$ 0.8	$-\frac{1}{2}$ 0.7	$-\frac{1}{2}$ 0.6
Q-hours .	H.H.W.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a
S-hours .	$11\frac{1}{2}a$	12b	11b	10b	9b	8b	7b	6b	5b	4b	3b	2b	1b
Constituent .	kn.												
SD—N.S. .	$+\frac{1}{2}$ 0.3	$+\frac{1}{2}$ 0.2	$+\frac{1}{2}$ 0.1	$-\frac{1}{2}$ 0.1	$-\frac{1}{2}$ 0.2	$-\frac{1}{2}$ 0.3	$-\frac{1}{2}$ 0.3	$-\frac{1}{2}$ 0.3	$-\frac{1}{2}$ 0.1	0.0	$+\frac{1}{2}$ 0.2	$+\frac{1}{2}$ 0.3	$+\frac{1}{2}$ 0.3
D—N.S. .	$+\frac{1}{2}$ 0.2	$+\frac{1}{2}$ 0.1	$+\frac{1}{2}$ 0.1	0.0	$-\frac{1}{2}$ 0.1	$-\frac{1}{2}$ 0.1	$-\frac{1}{2}$ 0.2	$-\frac{1}{2}$ 0.2	$-\frac{1}{2}$ 0.2	$-\frac{1}{2}$ 0.3	$-\frac{1}{2}$ 0.3	$-\frac{1}{2}$ 0.2	$-\frac{1}{2}$ 0.2
SD—E.W. .	$-\frac{1}{2}$ 0.2	$-\frac{1}{2}$ 0.3	$-\frac{1}{2}$ 0.3	$-\frac{1}{2}$ 0.3	$-\frac{1}{2}$ 0.1	0.0	$+\frac{1}{2}$ 0.2	$+\frac{1}{2}$ 0.3	$+\frac{1}{2}$ 0.3	$+\frac{1}{2}$ 0.3	$+\frac{1}{2}$ 0.2	0.0	$-\frac{1}{2}$ 0.1
D—E.W. .	$-\frac{1}{2}$ 0.5	$-\frac{1}{2}$ 0.4	$-\frac{1}{2}$ 0.2	$-\frac{1}{2}$ 0.1	$+\frac{1}{2}$ 0.3	$+\frac{1}{2}$ 0.5	$+\frac{1}{2}$ 0.6	$+\frac{1}{2}$ 0.8	$+\frac{1}{2}$ 0.9	$+\frac{1}{2}$ 0.9	$+\frac{1}{2}$ 0.8	$+\frac{1}{2}$ 0.7	$+\frac{1}{2}$ 0.6

Q = Intervals from H.H.W. at Little Quoin island.

S = Intervals from H.H.W. at Shatt al 'Arab bar.

SD—N.S. = Semi-diurnal constituent, + direction N., — direction S.

D—N.S. = Diurnal constituent, + direction N., — direction S.

SD—E.W. = Semi-diurnal constituent, + direction E., — direction W.

D—E.W. = Diurnal constituent, + direction E., — direction W.

TABLE II.—Mitre hill, Henjäm, bearing 332° , distant 13.8 miles.
(Lat $26^{\circ} 27' 45''$ N., Long. $56^{\circ} 01' 35''$ E.)

T-hours .	12b	11b	10b	9b	8b	7b	6b	5b	4b	3b	2b	1b	H.H.W.
S-hours .	1½a	2½a	3½a	4½a	5½a	6½a	7½a	8½a	9½a	10½a	11½a	12½b	11½b
Constituent .	kn.												
SD—N.S. .	—	—	—	—	—	—	0.0	0.2	0.4	0.5	0.5	0.4	0.2
D—N.S. .	+ 0.1	— 0.1	— 0.2	— 0.3	— 0.4	— 0.5	— 0.6	— 0.6	— 0.6	— 0.5	— 0.5	— 0.4	— 0.1
SD—E.W. .	— 0.2	— 0.2	— 0.2	— 0.1	+ 0.1	+ 0.2	+ 0.2	+ 0.2	+ 0.2	+ 0.1	+ 0.1	— 0.2	— 0.2
D—E.W. .	+ 0.2	0.0	— 0.2	— 0.4	— 0.5	— 0.6	— 0.7	— 0.7	— 0.7	— 0.7	— 0.6	— 0.4	— 0.2
T-hours .	H.H.W.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a
S-hours .	11½b	10½b	9½b	8½b	7½b	6½b	5½b	4½b	3½b	2½b	1½b	½b	½a
Constituent .	kn.												
SD—N.S. .	— 0.2	— 0.4	— 0.5	— 0.5	— 0.3	— 0.1	+ 0.2	+ 0.4	+ 0.5	+ 0.5	+ 0.3	+ 0.1	— 0.1
D—N.S. .	— 0.1	0.0	+ 0.2	+ 0.3	+ 0.4	+ 0.5	+ 0.6	+ 0.6	+ 0.6	+ 0.5	+ 0.4	+ 0.3	+ 0.2
SD—E.W. .	— 0.2	— 0.2	— 0.2	— 0.1	0.0	+ 0.1	+ 0.2	+ 0.2	+ 0.2	+ 0.1	0.0	— 0.1	— 0.2
D—E.W. .	— 0.2	— 0.1	+ 0.1	+ 0.3	+ 0.5	+ 0.6	+ 0.7	+ 0.7	+ 0.7	+ 0.7	+ 0.6	+ 0.5	+ 0.3

T = Intervals from H.H.W. at Jazirat Tumb.

S = Intervals from H.H.W. at Shatt al 'Arab bar.

SD — N.S. = Semi-diurnal constituent, + direction N., — direction S.

D — N.S. = Diurnal constituent, + direction N., — direction S.

SD — E.W. = Semi-diurnal constituent, + direction E., — direction W.

D — E.W. = Diurnal constituent, + direction E., — direction W.

TABLE III.—Henjām sound, Ras al Masheh beacon, bearing 271° ,
distant 4 cables.

(Lat. $26^{\circ} 41' 32'' N.$, Long. $55^{\circ} 53' 58'' E.$)

H-hours .	12b	11b	10b	9b	8b	7b	6b	5b	4b	3b	2b	1b	H.H.W.
S-hours .	$\frac{1}{2}a$	$1\frac{1}{2}a$	$2\frac{1}{2}a$	$3\frac{1}{2}a$	$4\frac{1}{2}a$	$5\frac{1}{2}a$	$6\frac{1}{2}a$	$7\frac{1}{2}a$	$8\frac{1}{2}a$	$9\frac{1}{2}a$	$10\frac{1}{2}a$	$11\frac{1}{2}a$	$12\frac{1}{2}b$
Constituent .	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.
SD. . .	— 0·7	— 0·6	— 0·3	0·0	+ 0·4	+ 0·6	+ 0·7	+ 0·6	+ 0·4	+ 0·0	— 0·3	— 0·6	— 0·7
D. . .	— 1·0	— 1·1	— 1·0	— 1·0	— 0·8	— 0·6	— 0·4	— 0·2	+ 0·1	+ 0·3	+ 0·6	+ 0·8	+ 1·0
H-hours .	H.H.W.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a
S-hours .	$12\frac{1}{2}b$	$11\frac{1}{2}b$	$10\frac{1}{2}b$	$9\frac{1}{2}b$	$8\frac{1}{2}b$	$7\frac{1}{2}b$	$6\frac{1}{2}b$	$5\frac{1}{2}b$	$4\frac{1}{2}b$	$3\frac{1}{2}b$	$2\frac{1}{2}b$	$1\frac{1}{2}b$	$\frac{1}{2}b$
Constituent .	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.
SD. . .	— 0·7	— 0·6	— 0·4	— 0·1	+ 0·2	+ 0·5	+ 0·7	+ 0·7	+ 0·5	+ 0·2	— 0·2	— 0·5	— 0·7
D. . .	+ 1·0	+ 1·0	+ 1·1	+ 1·0	+ 0·9	+ 0·7	+ 0·5	+ 0·2	0·0	— 0·3	— 0·5	— 0·7	— 0·9

H = Intervals from H.H.W. at Henjām.

S = Intervals from H.H.W. at Shatt al 'Arab bar.

SD = Semi-diurnal constituent, + direction 132° , — direction 312° .

D = Diurnal constituent, + direction 132° , — direction 312° .

TABLE IV.—In channel northward of, or about 6 miles southward of Jazirat Tunb.

(Lat $26^{\circ} 19' N.$, Long. $55^{\circ} 19' E.$, or Lat. $26^{\circ} 09' N.$, Long. $55^{\circ} 19' E.$)

T-hours .	12b	11b	10b	9b	8b	7b	6b	5b	4b	3b	2b	1b	H.H.W.
S-hours .	$1\frac{1}{2}a$	$2\frac{1}{2}a$	$3\frac{1}{2}a$	$4\frac{1}{2}a$	$5\frac{1}{2}a$	$6\frac{1}{2}a$	$7\frac{1}{2}a$	$8\frac{1}{2}a$	$9\frac{1}{2}a$	$10\frac{1}{2}a$	$11\frac{1}{2}a$	$12\frac{1}{2}b$	$11\frac{1}{2}b$
Constituent .	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.
SD. . .	— 0·9	— 1·0	— 0·8	— 0·5	0·0	+ 0·5	+ 0·9	+ 1·0	+ 0·9	+ 0·5	— 0·0	— 0·4	— 0·7
D. . .	— 0·8	— 1·2	— 1·4	— 1·5	— 1·6	— 1·4	— 1·1	— 0·7	— 0·4	— 0·2	0·0	+ 0·3	+ 0·6
Q-hours .	H.H.W.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a
S-hours .	$11\frac{1}{2}b$	$10\frac{1}{2}b$	$9\frac{1}{2}b$	$8\frac{1}{2}b$	$7\frac{1}{2}b$	$6\frac{1}{2}b$	$5\frac{1}{2}b$	$4\frac{1}{2}b$	$3\frac{1}{2}b$	$2\frac{1}{2}b$	$1\frac{1}{2}b$	$\frac{1}{2}b$	$\frac{1}{2}a$
Constituent .	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.	kn.
SD. . .	— 0·7	— 1·0	— 0·9	— 0·6	— 0·3	+ 0·2	+ 0·7	+ 1·0	+ 1·0	+ 0·9	+ 0·4	— 0·1	— 0·5
D. . .	+ 0·6	+ 1·0	+ 1·3	+ 1·4	+ 1·5	+ 1·4	+ 1·2	+ 0·8	+ 0·6	+ 0·5	+ 0·2	— 0·1	— 0·4

Q = Intervals from H.H.W. at Jazirat Tunb.

S = Intervals from H.H.W. at Shatt al 'Arab bar.

SD = Semi-diurnal constituent, + direction easterly, — direction westerly.

D = Diurnal constituent, + direction easterly, — direction westerly.

TABLE V.—FACTORS

a. SEMI-DIURNAL

Astronomical conditions	Factor
2 days after (and)	0.5
3 days or 1 day after (and)	0.5
3 days before ● and ○ or at (and)	0.6
2 days before ● and ○ or 1 day before (and)	0.7
1 day before ● and ○ or 2 days before (and)	0.8
At ● and ○ or 3 days before (and)	0.9
1 day or 3 days after ● and ○	1.0
2 days after ● and ○	1.0

b. DIURNAL

Astronomical conditions	Factor
1 day after E.	0.0
2 days after E. or at E.	0.2
3 days after or 1 day before E.	0.4
3 days before N. and S. or 2 days before E.	0.6
2 days before N. and S. or 3 days before E.	0.8
1 day before or 3 days after N. and S.	0.9
At or 2 days after N. and S.	1.0
1 day after N. and S.	1.0

●—New moon.)—First Quarter. ○—Full moon. (—Last Quarter.
E—Moon on equator. N=Greatest north declination.
S=Greatest south declination.

EXPLANATION.—Tables I to IV depend on the assumption that the stream is entirely due to the moon. As this assumption is not correct, and as the observations available are insufficient for complete analysis, no high degree of accuracy is to be expected in the streams predicted from the tables.

Tables I to IV give rates of the semi-diurnal constituent of the stream at springs, and of the diurnal constituent due to the moon's greatest declination. Table V gives factors, by which these rates are to be multiplied in order to obtain the rates at other astronomical conditions.

The streams in Table I are rotary. It has, therefore, been necessary to give tables for both the N. and E. components. At other positions the streams run mainly in two opposite directions only, as given under the tables.

The best results will be obtained by reference to the time of higher high water at the local tidal station, computed from the harmonic constants (see Admiralty Tide Tables, Part II). Diurnal inequality in the local heights of high water is small and the high water to be considered the higher, and used for reference, is always that which differs in time by about $\frac{1}{2}$ -day from the corresponding higher high water at Shatt al 'Arab bar, even though, as computed, this is the lower high water.

INSTRUCTIONS.—The first line of each portion of each table gives the interval from higher high water at the local reference station, the second line the interval from the corresponding higher high water at Shatt al 'Arab bar. The line marked SD in the left column gives the rates of the semi-diurnal constituent of the stream, and that marked D the rates of the diurnal constituent, according to the time intervals from higher high water.

The rates given in the tables are to be multiplied by the factor from Table V, according to astronomical conditions.

The stream to be expected at any time is the sum of the rates of the semi-diurnal and diurnal constituents at that time. When using, Table I, the N. and E. stream components must be computed separately and their resultant found from the Traverse table.

Example : Required direction and rate of stream at position of Table I at 20h. on 10 December, 1930.

10 December is 1 day before O, 2 days before S. Factors, 0.8 and 0.9.

H.H.W. at Shatt al 'Arab bar 01 05 (11th). (Admiralty Tide Tables, Part I).

" " Little Quoin island, 12 30 (10th). (Computed from harmonic constants.)

1. Referred to Little Quoin island, time is $7\frac{1}{2}$ h. after H.H.W.
N. Component : $(-0.2 \times 0.8) + (-0.2 \times 0.9) = -0.34$
E. Component : $(+0.3 \times 0.8) + (+0.85 \times 0.9) = +1.00$
Stream : 109° 1.06 knot.

2. Referred to Shatt al 'Arab bar, time is 5h. before H.H.W.
N. Component : $(-0.1 \times 0.8) + (-0.2 \times 0.9) = -0.26$
E. Component : $(+0.3 \times 0.8) + (+0.9 \times 0.9) = +1.09$
Stream : 109° 1.12 knot.

NOTE.—Difference in times of H.H.W. at the local reference station and at Shatt al 'Arab bar is not constant; variations in this difference result in small differences in the computed stream.

CURRENT.

Observations show currents as follows :—

Position of Table I : In December, Easterly, 0.2 knot.

Position of Table II : In March, South-westerly, 0.75 knot ;
and in January, Southerly, 0.5 knot.

In Henjām sound : In December, no appreciable current.

Near Jazirat Tumb : In April, Westerly, 0.25 knot.

Information regarding currents in the entrance of the Persian gulf is incomplete; the probability is that, owing to evaporation in the gulf, an in-going current runs in summer, and that in winter, when evaporation is least, the in-going current is at its minimum. From the results of observations, given above, it is probable that the rate of the in-going current in the narrowest part of the entrance, may be as much as 2 knots at midsummer, decreasing westward and south-eastward.

Horizontal movement of the water is the resultant of stream and current. Stream, as found from the tables, is therefore to be combined with current, using the Traverse table.

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